Ontario

Annual Report on Forest Management 1999/2000

FOREST INFORMATION SERIES

Annual Report on Forest Management

For the year April 1, 1999 to March 31, 2000

Minister of Natural Resources of
the Province of Ontario

To her Honour
The Lieutenant-Governor of the
Province of Ontario

May it please your Honour

The undersigned begs respectfully to present to your Honour the Annual Report on Forest Management for the fiscal year beginning April 1, 1999 and ending March 31, 2000.

John C. Snobelen
Minister

September, 2001

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Executive Summary

In 1994, the Environmental Assessment (EA) Board in Ontario issued its decision on the *Class Environmental Assessment by the Ministry of Natural Resources for Timber Management on Crown Lands in Ontario.*

The EA Board's decision approved the timber management process described by the Ministry of Natural Resources (MNR), with 115 binding terms and conditions. One of these conditions requires MNR to make an annual report on forest management to the provincial legislature. This is the fifth such annual report. It covers the year April 1, 1999 to March 31, 2000 but, because of the time period when data was collected, some of the information refers to 1998/99.

The forest management legislative and policy framework of MNR has been undergoing significant improvements in recent years. The *Crown Forest Sustainability Act (CFSA)*, which came into effect in 1995, requires anyone operating in a Crown forest in Ontario to ensure the long term health of the forest so that all the benefits of Crown forests are available to future generations.

Ministry of Natural Resources has instituted changes affecting the responsibilities of the forest industry, the opportunities for the general public to become involved in forest management planning, the system for licencing forest companies, the fees paid to harvest wood, and the funding for forest renewal (which is now stabilized through mechanisms that provide dedicated funding for renewal).

Ontario's inventoried land covers about 61.5 million hectares, with 40.3 million hectares classed as productive forested lands. The productive forested land on Crown land covers about 34.1 million hectares, with 26.0 million hectares of this area eligible for forestry activities. The focus of this annual report is to provide information on the activities carried out on this 26.0 million hectares. This area is referred to as the Area of the Undertaking (AOU) in the EA Board's decision.

Announced on March 29, 1999, Ontario's Living Legacy represents a major milestone in natural heritage protection and provides a land-use strategy for an area covering 45 percent of the province of Ontario. Ontario's Living Legacy established 378 new parks and protected areas, covering 2.4 million hectares, and brings the total area of provincial parks and protected areas in Ontario to 9.5 million hectares. These parks were established to represent natural heritage features and protect the integrity of the ecosystems they encompass. The combination of the area of these new parks and protected areas, existing parks, and other areas normally excluded from harvesting has reduced the total area within Ontario where forest harvest operations are allowed to occur. As of 1999, the area within Ontario where forest operations are allowed to include normal harvesting is limited to 19.9 percent of Ontario's 106.8 million hectares of land and water.

The AOU is now divided into 68 management units (as of April 1, 1999). The sixty-eighth management unit is comprised of all the pieces of Crown land in southern Ontario outside the AOU. The CFSA requires that an approved forest management plan be in place for each management unit before any forestry operations take place. A forest management plan covers a 20-year period. It describes the values of the forest in a management unit, as well as the harvesting, renewal, and other forestry-related activities that will take place. A forest management plan is renewed every five years through a process that provides opportunities for public input. In 1999 and 2000, 27 forest management plans and contingency plans were approved and implemented.

The CFSA provides for two types of licences: Forest Resource Licences and Sustainable Forest Licences. In 1999/00, MNR issued a total of 3,620 licences covering a total of over 25.0 million hectares of productive forest area. Some of these licenses overlap one another, which inflates the area of productive forest.

The figures for total harvest by area and volume used in this report are from 1998/99 because data collection on harvesting and other disturbances is not completed until late in a given year. In 1998/99, harvesting activities took place on 205,329 hectares. A total of almost 21.3 million cubic metres of wood was harvested within the AOU. Forest fires occurred on a further 80,953 hectares of productive forest.

The CFSA requires a significant portion of the money paid by forest companies to be designated exclusively for forest renewal activities. In 1999/00, the Government of Ontario received a total of nearly $249.6 million for wood harvested, of which over $93.9 million went directly to funds designated for the maintenance and renewal of the forest, and for work associated with ensuring the future of the forest. In the same period, a total of over $102.7 million was spent on forest renewal activities.

Renewal of the forest occurs both naturally and with assistance. In 1999/00, there was natural regeneration (even and uneven-aged) on 95,282 hectares of land. Assisted renewal occurred on 114,375 hectares. Site preparation activities, such as by mechanical means, chemical spraying, and prescribed burning, took place on another 93,772 hectares. In total, renewal activities were carried out on 303,429 hectares of productive forest.

Tending and protection activities were conducted to improve the quality and growth of some areas of the forest. During 1999/00, tending and protection activities such as thinning and pest control were carried out on 104,007 hectares of forest.

Forestry operations require a complex system of primary and secondary roads, the cost of which is now borne by forest companies. In 1999/00, 528 kilometres of primary and secondary roads were constructed in Ontario forests to serve management activities. Maintenance work was carried out on another 15,645 kilometres of road.

This report discusses the efforts of MNR and First Nations communities in MNR districts to respond to Term and Condition #77 of the Timber Class EA decision, and to implement ways of achieving a more equal participation by Aboriginal peoples in the benefits derived from forest management activities.

This is the second annual report of compliance monitoring to provide results of "industry self-monitoring and reporting". The forest industry is required to report the results of their inspections to MNR. The MNR conducts inspections to verify all instances of non-compliance reported by companies, as well as to carry out random and planned inspections of forest operations. Of the 6,644 inspections undertaken across the province, 4,538 were conducted by companies and 2,106 were conducted by MNR. The vast majority of the inspections reported compliant operations. A total of 147 remedial actions were required by MNR that ranged from warnings to "stop work"orders, and included administrative penalties.

All management units are audited at least once every five years. In 1999/00, independent forest audits were conducted on 14 management units (Big Pic, Caribou, Dryden, Flanders, Fort Frances, J.E. Martel, Lakehead, Trout Lake, and Whiskey Jack Forests; and the Elk Lake, Lanark, Mazinaw, Timiskaming, and Watabeag Management Units).

Part of MNR's monitoring responsibilities include assessing the impacts of forestry activities on the forest ecosystem over the long term. The final chapter of this report details policies, procedures, research, and scientific studies that MNR is undertaking to ensure that the guidelines, data, methodologies, and underlying science are available to monitor and manage forest management activities effectively.

Chapter 1

Introduction

Management of Ontario's forests has evolved through past decades from managing for timber to managing for all the values of the forest. With the introduction of the *Crown Forest Sustainability Act* (CFSA) in 1995, Ontario adopted a policy of managing Crown forests according to the principles of sustainability; that is, to conserve large, healthy, diverse, and productive forests and their associated ecological processes and biological diversity. Forest management has also been guided by the *Environmental Assessment Act*. In 1988, the Environmental Assessment (EA) Board began an assessment of the Crown land timber management planning process of the Ministry of Natural Resources (MNR), which is responsible for forest management in Ontario. Six years later, after extensive public hearings, the Board released its decision on the *Class Environmental Assessment by the Ministry of Natural Resources for Timber Management on Crown Lands in Ontario* for a large part of the province, referred to as the Area of the Undertaking (AOU). The EA Board approved MNR's planning process for Crown forests with 115 terms and conditions. One of the conditions is that MNR prepare an annual report that provides the legislature and the public with information on Ontario's Crown forests.

This document is the fifth such annual report and covers the period April 1, 1999 to March 31, 2000. However, the information on disturbances, such as harvesting, forest fires, and insects, is from 1998/99. This is because disturbed areas are mapped and inventoried in the fall of the year in which the disturbances occurred, to allow time to complete the gathering of information. Therefore, the gathering of information on disturbances is completed too late in any given year for the data to be included in a report on activities during that same year. New data, information, errors or omissions noted since the last report are also addressed in this report.

For management purposes, Ontario's Crown forests are now divided into 68 management units (as of April 1999), each of which is managed according to its own 20-year forest management plan. Each plan is

renewed every five years through a process established in law. This annual report includes information on the most recent harvesting and renewal activities for the forest as a whole and provides a list of forest management plans in various stages of development to be implemented in 1998 to 2002 inclusive, following their approval.

Also included is an overview of the new licencing and revenue-generating system for forest management activities. This annual report also presents information about Term and Condition #77 (T & C #77) of the Timber Class EA decision by providing an update on MNR's progress on the involvement of Aboriginal communities in the benefits of forest management.

Forest management activities and their effects are monitored by MNR to ensure that forest management plans are being followed appropriately and to check on the long-term health of the forest. These monitoring systems are explained in this report.

The report concludes with an overview of the ongoing activities and future directions of MNR, as required by the Timber Class EA decision.

With this annual report, MNR is providing information that will help in understanding how Ontario's Crown forests are being managed and provides baseline information against which future forest management activities and annual reports can be compared.

Other documents are available that provide information about forest management. They include:

- the *Policy Framework for Sustainable Forests*, which lays out the principles for managing forests sustainably in Ontario
- MNR's *Statement of Environmental Values*, which sets out the environmental principles that govern MNR's management of Ontario's natural resources
- the CFSA
- the *Forest Management Planning Manual*
- the *Forest Operations and Silviculture Manual*
- the *Scaling Manual*
- the *Forest Information Manual*
- the decision of the EA Board on MNR's Class Environmental Assessment for Timber Management on Crown Lands in Ontario,

which contains the reasons behind their approval of the forest management planning process and the terms and conditions that the Board set on its approval

- the *Forest Resources of Ontario 1996*, a snapshot of statistics on the state of Ontario's forests

Chapter 2

The Forest Estate

Throughout this document, Crown land refers to land that is owned by Ontario for the people of the province and, in general, is managed by MNR. The figures provided in this chapter are from a provincial inventory updated in 1996 and do not reflect changes put into effect by Ontario's Living Legacy program.

The total inventoried land area of the province of Ontario is about 61.5 million hectares, about 40.3 million hectares of which are productive forested lands. The productive forested lands consist of 34.1 million hectares of Crown land, 5.8 million hectares of private land, and 0.4 million hectares of federal land. The Crown productive forested lands are further divided into 26.0 million hectares where forest management activities take place, 3.6 million hectares of parks, recreational reserves, and protection forest, and 4.5 million hectares of Crown land outside the AOU.

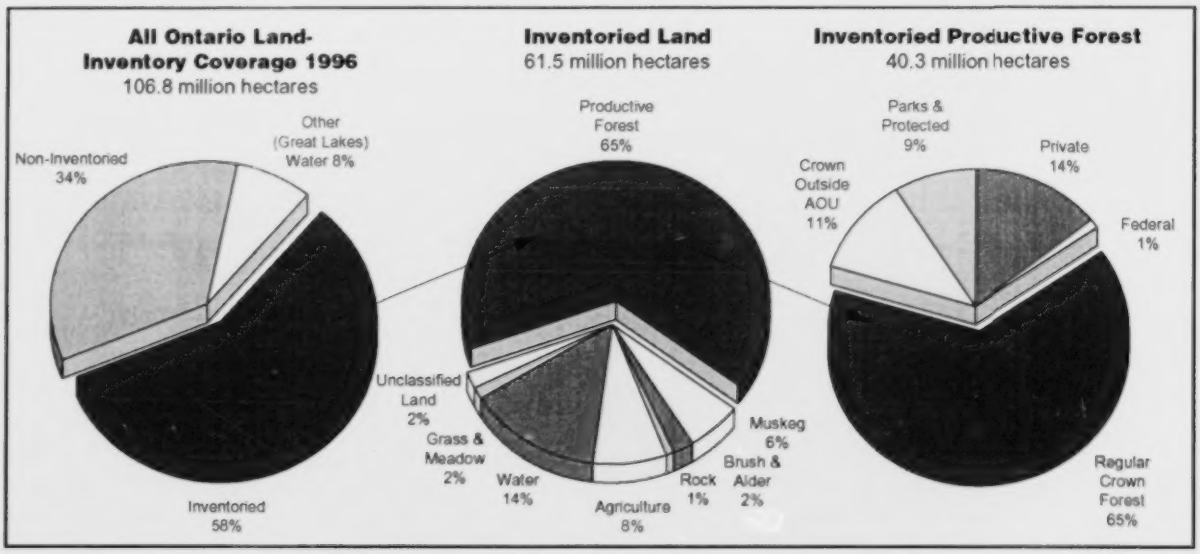
Ontario's Forest Inventory

Ontario has been inventorying its forests since 1922. Using aerial photographs and field verification, MNR creates the Forest Resource Inventory (FRI) by classifying forest stands and other areas into broad physical categories including productive forest, non-productive forest, non-forested land, and bodies of water. Each component is further classified by its ownership and land use. This inventory provides baseline information for management planning and for monitoring the health of the forest. The FRI was used to help prepare this report.

A new inventory is required to be conducted on each management unit approximately every 20 years, and must be updated at the start of each new forest management plan to reflect all changes to the forest (i.e., depletions and accruals) that occurred prior to the commencement of the new plan. Depletions include harvest and natural reductions, such as those caused by wildfire, insects, disease, and blowdowns. Accruals include the results of forest renewal and tending activities for both assisted and naturally regenerated areas.

Figure 1
All Land Classifications within Inventoried Area

Figure 1 illustrates all the land classifications within the inventoried area in Ontario. A detailed table of all land classifications within the inventoried area can be found in Appendix 1.



The Crown, private, and federal portions of the productive forested areas in each of MNR's three administrative regions are shown in Table 1.

Table 1

Ownership of Productive Forested Lands in Ontario (000's hectares)

Ownership	Northwest Region	Northeast Region	Southcentral Region	Total
Crown	17,370.9	14,909.3	1,859.3	**34,139.5**
Private	642.1	1,774.4	3,347.6	**5,764.1**
Federal	158.3	228.2	12.4	**398.9**
Total	**18,171.3**	**16,911.9**	**5,219.3**	**40,302.5**

Ontario has three major forest regions: the Deciduous Forest in southern Ontario, the Great Lakes-St. Lawrence Forest in southern and central Ontario, and the Boreal Forest in northern Ontario. Apart from provincial parks, there is little Crown land in southern Ontario.

Each forest region has distinct ecosystems, the extent of which are largely determined by temperature and precipitation ranges; each region also has tree, plant, bird, insect, and other wildlife species characteristic of its type. There are broad zones of natural transition from one ecosystem to another. The forest regions of Ontario are shown in Figure 2.

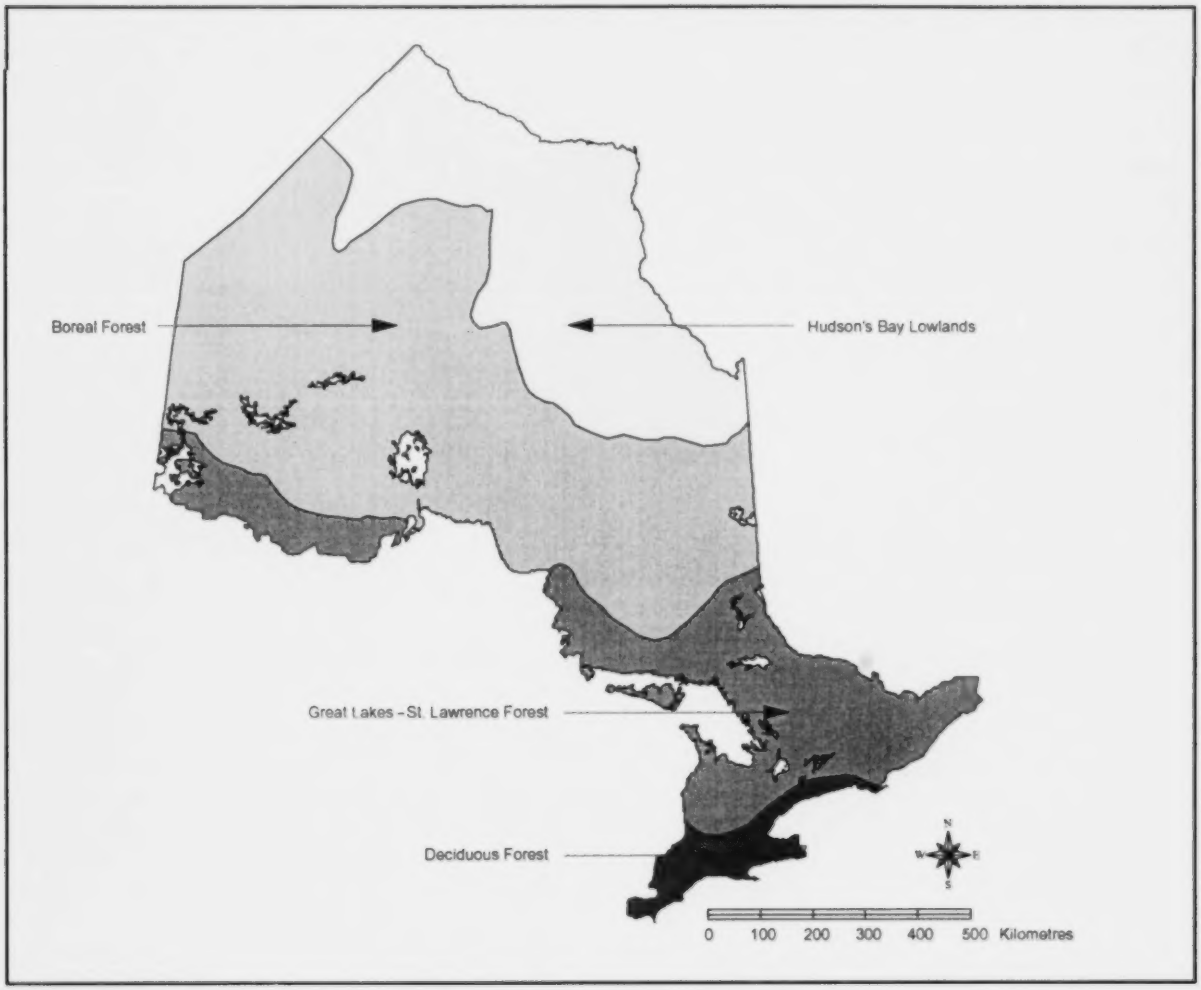


Figure 2
Ontario's Forest Regions

The Deciduous Forest is found in the most southern part of the province, mostly in concentrated pockets on private land and within provincial parks on the north shore of Lake Erie. This is the only occurrence of the Deciduous Forest in Canada.

The major deciduous species are sugar maple, beech, basswood, red maple, and several oaks. In the most southern portion of this region, Carolinian species such as tulip tree, cucumber tree, pawpaw, red mulberry, kentucky coffee tree, black gum, sassafras, and redbud are found. Species such as black walnut, sycamore, swamp white oak, shagbark and bitternut hickory, butternut, rock elm, silver maple, and blue ash are largely confined to this region. Conifers such as white pine, cedars, hemlock, spruce, and tamarack occur throughout.

The Deciduous Forest Region is about 3.0 million hectares in size. Less than 15 percent is actually forested, with only about 8,200 hectares of forest (.003 percent) owned by the Crown. More than 75 percent of this forest region is agricultural land and most of the remaining land is urban.

Human activity in the south has greatly modified the forest, which is now mostly restricted to areas with low agricultural potential. However, forests in this region are among the most productive in the province.

The Great Lakes-St. Lawrence Forest covers a broad band occupying the southern portion of the Precambrian Shield and the limestone area north of the Deciduous Forest. It is characterized by white and red pine, and maple. Other conifers in this region are jack pine, black and white spruce, tamarack, and cedar. The shade intolerant hardwoods found in this region are poplar and white birch. The shade tolerant hardwoods are, in their relative order of occurrence, hard maple, oak, and yellow birch. Other hardwoods such as soft maple, black ash, beech, and basswood can also be found in this region.

In the southern part of the Great Lakes-St. Lawrence Forest, there is a large amount of privately-owned forests, which are managed for forest products, recreation, wildlife habitat, and other environmental or socio-economic benefits. In the central and northern part of the region, the land is predominantly owned by the Crown.

The Boreal Forest is a global band of conifer-dominated forest that stretches across Scandinavia, Russia, Alaska, and northern Canada. In Ontario, the Boreal Forest extends from the northern limits of the Great Lakes-St. Lawrence Forest to the Hudson's Bay Lowlands.

The Boreal Forest is characterized by conifers such as jack pine, black and white spruce, and balsam fir, together with deciduous species such as poplar and white birch.

This forest region is by far the largest in the province. Part of the Boreal Forest is further divided into the Hudson Bay Lowlands based on its sub-arctic climate and its low site productivity. Most of the land in the Boreal Forest region is Crown land.

The Boreal Forest is influenced by natural disturbances, such as fires, heavy winds, and insects, which can affect large areas of the forest. During the last 80 years, timber harvesting and forest fire prevention efforts have affected the mix of tree species and age of the Boreal Forest in the AOU.

Ontario's Living Legacy

Announced on March 29, 1999, Ontario's Living Legacy represents a major milestone in natural heritage protection and provides a land-use strategy for an area covering 45 percent of the province of Ontario. The strategy provides greater long-term security to the forest and mining industries by providing security of the land base. It also committed to the resource-based tourism industry by recognizing the need for certainty in their future and at the same time provided greater opportunities for outdoor recreational activities.

Ontario's Living Legacy was the result of a massive public consultation process, called Lands for Life, launched by the Ontario Government through the MNR in 1997. The goals of that consultation were to:

a) complete Ontario's system of parks and protected areas;

b) recognize the land-use needs of the resource-based tourism industry;

c) provide forest, mining, and other resource-based industries with greater certainty of land and resource use;

d) enhance angling, hunting, and other Crown land recreation opportunities.

Implementation of the commitments made in Ontario's Living Legacy began soon after the announcement of this unprecedented land-use planning exercise.

New Parks and Protected Areas

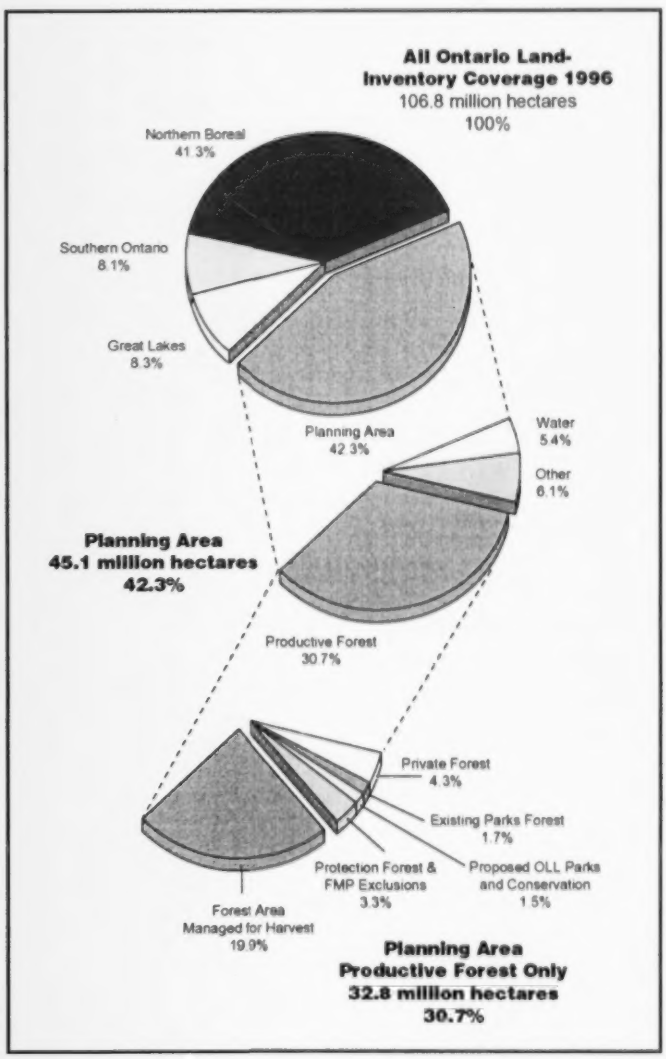
Ontario's Living Legacy established 378 new parks and protected areas, covering 2.4 million hectares, and brings the total area of provincial parks and protected areas in Ontario to 9.5 million hectares. These protected areas were established to represent natural heritage features and to protect the integrity of the ecosystems they encompass. The 'regulation' of the 378 parks and protected areas is a very complex process and each site requires additional local consultation to finalize the boundaries. As of March 31, 2000, 91 sites have been regulated.

The combination of the area of these new protected areas, existing protected areas, and other areas normally excluded from harvesting, has reduced the total area within Ontario where forest harvest operations are allowed to occur. As of 1999, the area within Ontario where forest operations are allowed to include normal harvesting is limited to 19.9 percent of Ontario's 106.8 million hectares of land and water, as illustrated in

Figure 3. The area identified as Northern Boreal Forest (41.3 percent of Ontario) in Figure 3 describes the large expanse of Boreal Forest and Hudson's Bay Lowlands in the far north. The Planning Area (42.3 percent of Ontario) refers to the middle zone where forest management is currently practiced. Southern Ontario (8.1 percent of Ontario) is the area where most people in the province live and is predominantly private land.

Figure 3

Ontario's forest Inventory (1999) and Ontario's Living Legacy



The Ontario Forest Accord

The Ontario Forest Accord is a cornerstone of Ontario's Living Legacy. The Accord supported the largest single expansion of protected areas in the history of the province. For the first time ever, the expansion of the parks and protected areas system was linked to protection of the forest industry and the communities and jobs that depend on it.

The Accord provides a cooperative framework within which the forest industry, the environmental community, and the government can work together. The Accord specifically provided for the "collaborative implementation" of this framework through the creation of a tripartite body entitled The Ontario Forest Accord Advisory Board (OFAAB). This Board is appointed by, and reports to, the Minister of Natural Resources.

There is equal representation (three members each) from the three parties that signed the Accord: the forest industry, the Partnership for Public Lands, and the MNR. As well as sending representatives to sit on the Board, MNR provides a secretariat function to coordinate and support the work of OFAAB.

The Board, through regular meetings, has made the following progress in 1999/01.

The Board established committees to work on:

- Establishing benchmarks that would be used to measure opportunities for future industrial

expansion and simultaneously, the future growth in parks based on the creation of additional wood supplies

- Identifying the outstanding gaps in natural heritage representation. Developing a process for sharing increases in wood supply with the forest industry to offset reductions resulting from the new parks and protected areas created to fill these gaps.
- Reviewing the current wood supply arrangements and providing direction on greater long-term security to the industry for their wood supply
- Developing the strategies that would promote increased fiber production on designated areas by employing intensive forest management
- A number of mitigation measures were identified in the Accord that promoted an increase in utilization and ensured that wood costs to the industry were not impacted by the expansion of the parks system. Some of the mitigation measures accepted and employed included:
  - the utilization of the low volume stands,
  - use of volumes from trees with less than the minimum top diameter, as prescribed in the regulated *Scaling Manual of Ontario*
  - semi-commercial thinnings, and
  - salvage operations in dead, decaying stands or blowdown areas

The Accord recognizes that the path to the future lies through shared solutions. It established the principle of working out issues together and it created a spirit of collaboration. The Accord recognizes the need for balance among competing interests. It holds promise as a model for working out other difficult issues where there are competing objectives and where there is recognition of the need for balanced, shared solutions.

Private Woodlands

Private and federally-owned woodlands, at 6.8 million hectares of productive forest area, comprise 17 percent of the inventoried productive forest area in Ontario. About 4.5 million hectares are located within the Planning Area, with the remaining 2.3 million hectares in southern Ontario. In the southwestern portion of the province, private woodlands represent in excess of 95 percent of the total area of woodlands and, consequently, take on a special ecological and economic significance.

The MNR's commitment to healthy forest ecosystems extends to these private forests, although it does not have the same direct stewardship responsibility as for Crown forests. The *Private Woodlands Strategy 1991* outlines how MNR will seek to influence the sustainable management of the province's private woodlands through:

- coordinating the programs and efforts of the many agencies and groups interested in promoting stewardship
- providing education and skills training opportunities for landowners to become more knowledgeable about stewardship
- providing effective policies as incentives to foster stewardship of woodlands
- providing legislative support

In 1999/00 MNR continued to implement the Ontario Stewardship Program which started in 1995/96. Led by MNR's 35 Stewardship Coordinators, 40 community stewardship councils consisting of landowners, interest groups, associations and resource management agencies are working together to meet collective community-based stewardship goals. There are about 600 councillors, all of whom are well connected with local land- and resource-based organizations. This program provides a forum for:

1. determining and expressing local needs and concerns,
2. improving coordination of resource agency resources and program delivery,
3. enhancing access to information and educational opportunities, and
4. enhancing partnerships, teamwork, respect, and understanding between landowners and those with an interest in the land and its environmental, social, and economic benefits.

In 1999/00 the MNR, in addition to providing the basic salary and support funding for the Stewardship Coordinators, made available grants totaling $300,000 to the local councils to assist them in leveraging additional funds to carry out local projects. This support encouraged 357 projects that ranged from conducting workshops on integrating natural resource management into agricultural practices, to best management practices for woodlands, wetlands, and wildlife. The Extension Note series of landowner-friendly fact sheets continued to grow in support of the stewardship

program. New titles, such as *Management Options for Abandoned Farm Fields and Conserving the Forest Interior: A Threatened Wildlife Habitat*, were added. There are now over 50 titles in this series.

In recognition of the importance of maintaining private woodlands for public benefits, MNR designed and implemented the Managed Forest Tax Incentive Program (MFTIP) in 1997 for implementation in the1998 tax year. The MFTIP was introduced to bring greater fairness to the property tax system by valuing forest land according to its current use. This was part of the government's broader property tax reform initiative. The Ontario Woodlot Association and the Ontario Forestry Association are partners in the delivery of this program and handle most of the public inquiries and program administration.

The MFTIP is designed to encourage landowner participation in natural resource stewardship on private forest land in Ontario. In 1999/00 the MFTIP had 8,698 properties on 590,971 hectares of land. Under the program, landowners who apply and qualify have their property reassessed and classified as Managed Forest and taxed at 25 percent of the municipal tax rate set for residential properties. Participants in the program range from landowners in Essex-Kent looking after the fragmented natural landscape to large forest companies in northern Ontario contributing to our northern economy.

Chapter 3

Forest Management Planning

In 1995, the CFSA came into effect which mandates that the province's Crown forests must be managed to ensure they remain large, healthy, diverse, and productive.

Since the CFSA became law, MNR has been active in implementing the requirements of this legislation, which continue to include well-defined management planning for the forest and public participation in the process.

Under the terms of another piece of Ontario legislation, the *Environmental Assessment Act*, the EA Board reviewed MNR's planning process for Crown forests and approved it, with terms and conditions. Reference is made to many of these in this report.

To handle the management of Ontario's Crown forests, the province is divided into management units. Ministry of Natural Resources requires an approved forest management plan to be in place for each management unit before any forest operations are undertaken. This ensures the long-term health of the forest covered by a plan. A map of Ontario showing the location of all management units is included as Appendix 2. The key to the map identifies the name of the management units and indicates who has forest management planning responsibility (e.g., the Crown (MNR) or a Sustainable Forest Licence (SFL) holder).

In recent years, there has been an amalgamation of some management units to realize efficiencies and improve implementation. As of April 1999, there are 68 management units, which was a reduction of one management unit from the previous year. Additional amalgamation proposals are still being evaluated.

Forest management plans are prepared according to the Forest Management Planning Manual, which directs how planning is to be carried out, monitored, reported on, and evaluated.

All forest management plans have a 20-year perspective and a five-year plan of operations. The five-year plan lays out what may be harvested,

how it may be harvested, how harvested forests are to be renewed, and what values (such as archaeological sites, wildlife habitat, or recreational facilities) are to be protected.

Plan implementation is monitored by MNR for each management unit to ensure that the plan is followed appropriately. Plans are normally renewed on a five-year planning cycle. A period of approximately 24 to 27 months is required for the preparation, review, and approval of a forest management plan.

Appendix 3 provides a list of all forest management plans approved for implementation in 1999/00. Appendix 3 also provides, in accordance with the requirements of the Timber Class EA decision for an annual report, the list of forest management plans scheduled for renewal in 2000, 2001 and 2002.

The Forest Management Planning Manual

The CFSA requires that forest management plans be prepared and approved following the *Forest Management Planning Manual*. The manual provides direction on how to determine sustainability and requires that specific information, such as the following, be included in a forest management plan:

- an environmental, social, and economic description of the management unit
- long-term strategic direction for the management of the forest, including how sustainability is measured through the analysis of a range of management alternatives and the selection of the preferred alternative, the determination of areas eligible for operations during the 20-year period of the plan, and the planning of primary access corridors for the 20-year period
- areas of operations, the development of operational prescriptions, and the determination of primary and secondary access road locations for the five-year term of the plan
- a description of the program for monitoring forest management operations, and assessing renewal success
- supplementary documentation requirements, and a forest management plan summary

Chapter 4

Forest Users and Government Revenue

Ontario's Crown forests provide the forest resources for a diverse number of forest-based industries, including lumber, structural board, pulp, paper, and newsprint. Crown forests also provide opportunities for tourism, recreation, trapping, hunting, fishing, and food production. In addition, service industries and facilities that support forest activities also depend on Crown forests.

In 1998, the forest industry contributed significantly to the economy of Ontario with shipments of more than $15.0 billion. Employment within the forest industry was 187,000. Included in this figure are direct, indirect, and induced jobs. Statistics Canada figures for 1999 are not yet available.

Based on the most recent Statistics Canada census (1996), 50 Ontario communities, mostly located in northern Ontario, had at least 20 percent of their labour force employed in the forest industry. Appendix 4 lists these Ontario communities, shows the total labour force for each community, and identifies the percentage that worked in the forest sector.

As well as being a major employer, the forest industry annually invests in capital improvements and mill expansions. In 1998, the forest industry had capital and repair expenditures of $1.5 billion.

The Forest Products Industry

The forest products industry is comprised of the logging industry, the wood products manufacturing industries, the paper manufacturing industries, and other related industries.

The logging industry is made up of both large and small contractors, as well as large, mill-owned operations. The contractors may work independently or directly for company-owned mills.

The wood products manufacturing industries include businesses such as sawmills, veneer mills, and structural board plants producing construction materials and specialty wood products. The capital investment in these mills range from a few thousand dollars to several million dollars.

Pulp and paper mills are the largest types of plants for converting timber fibre to forest products. A greenfield pulp mill can cost close to $1.0 billion. Their output represents almost 60 percent of the value of all forest product shipments.

Table 2 shows the distribution of various manufacturing activities by sector and direct employment within each sector in 1998/99.

Table 2

Distribution of manufacturing activities by sector and direct employment within each sector

	No. of Establishments		No. of Employees		Total Value Added	
Sector	Number	% of Canadian Total	Number	% of Canadian Total	Value Added ($ Millions)	% of Canadian Total
Logging*	1,756	20	6,232	14	597	14
Wood Product Manufacturing	525	23	33,998	28	1,873	20
Paper Manufacturing	308	45	25,777	26	4,084	30
TOTAL	**2,589**	**22**	**66,007**	**25**	**6,554**	**25**

Source: Statistics Canada 1998

This table uses the new North American Industry Classification System(NAICS) which replaces the Standard Industrial Classification system (SIC) used previously. Comparisons with data from past years require the use of convergence tables.

* The logging information is from 1998/99, 1999/00 information not yet available.

The Licencing System

The vast majority of Ontario's forests are harvested by companies or individual operators that hold one of two types of licences: Forest Resource Licences (FRLs) and SFLs. The total land under both licence types is shown in Table 3.

Table 3

Crown Production Forest Area Under Licence in 1999/00 by Licence Type

Licence Type	Number of Licences	Productive Forest Area (hectares)
FRL < 300 hectares	3,439	99,848
FRL > 300 hectares	97	175,044
FRL Salvage	33	17,035
SFL	51	24,753,730
Total	**3,620**	**25,045,657 ***

During the 1999/00 fiscal year the MNR changed the Forest Resource Licences (FRL) to include licences greater and less than 300 hectares

*Although Chapter 2 refers to 26.0 million hectares where forest management activities take place, many FRLs and most salvage licenses are issued on existing SFLs, which inflates the area of productive forest.

Forest Management Responsibilities in Ontario

An SFL requires the licensee to prepare forest management plans following the direction of the *Forest Management Planning Manual*. The licensee is responsible for implementing forest management plans by carrying out access, harvest, renewal, and maintenance activities. The SFL holder must follow the rules and guidelines set by MNR to ensure forests are managed sustainably.

Forest Resource Licence holders follow forest management plans approved by MNR and must operate in a way that ensures the long-term health of the forest.

Ontario's Stumpage System

In 1999/00, the Government of Ontario received direct payments from the forest industry in the form of royalty or stumpage payments, and indirect payments from taxes.

Forest companies pay a stumpage fee to the Crown for every cubic metre of timber harvested. A market-based pricing system is used by MNR to calculate the stumpage fees that companies and individuals pay for harvesting timber from Crown land to ensure the province receives a fair return for this resource. In times of strong market prices for forest products, the market-based system triggers higher fees. In times of low prices, forest industries pay lower fees.

The Crown's stumpage fees are composed of three Crown charges:

- A minimum charge per cubic metre of harvested timber, regardless of species harvested, that goes into the Consolidated Revenue Fund of the province. This charge is adjusted annually. The minimum charge was raised by $1.34 from $1.50 to $2.84 per cubic metre on April 1, 1997, and was raised by $0.01 per cubic metre harvested to $2.85 on April 01, 1998. On April 1, 1999 the minimum charge was raised $0.38 to $3.23 per cubic metre.
- A forest renewal charge to provide dedicated funding for forest renewal. This charge varies depending upon the tree species and the anticipated renewal cost for that species. Forest renewal charges are held in either a Forest Renewal Trust fund or a Forest Renewal Special Purpose Account and may only be used for regenerating and maintaining the health of Ontario's forests.
- A residual value charge, paid to the province's consolidated revenues by forest companies or individuals licensed to harvest timber. The calculation of this charge varies from zero in times of low product prices to about $20.00 per cubic metre when product prices are high.

The forest industry also pays into the Forestry Futures Trust (FFT) fund through a $0.48 charge per cubic metre of timber harvested. The FFT is managed by an independent committee established by the Crown, and funds projects that meet MNR-approved criteria. To qualify, projects must be: a silvicultural activity on Crown land that addresses renewal of trees killed or damaged by fire; renewal of land where a licensee becomes insolvent; forest protection from insect or disease infestation; or, intensive stand management related to a critical wood supply.

The special conversion charge of $0.38 per cubic metre of harvest applied in 1998/99 to SFL licensees was discontinued as of April 1, 1999. This charge was used to assist the new, smaller SFLs with costs associated with the establishment of an SFL (e.g., inventory).

Table 4 shows the direct payments from the forest industry to the various government accounts during the last five fiscal years. The Forest Renewal Special Purpose Account will be phased out once all Crown management units, currently under direct management by MNR, have been converted to SFLs.

Table 4

Crown Charge Payments by the Forest Industry ($000s)

Year	Area Charges	Forestry Futures Trust	Consolidated Revenue Fund	Forest Renewal Trust	Forest Renewal Trust & SPA(f)	Total Payments
1995-96	9,905.8	7,121.3 (a)	89,162.2	58,628.6	36,505.5	**201,323.4**
1996-97	11,269.7	7,861.4	111,669.0	51,628.9	34,755.1	**217,184.1**
1997-98	(b)	10,576.7 (c)	178,063.2	52,373.5	44,159.0	**285,172.4**
1998-99		20,605.3 (d)	157,452.3	71,298.9	28,930.8	**278,287.3**
1999-00		10,050.7 (e)	155,695.7	78,668.1	5,147.9	**249,562.4**

(a) For the period February 7, 1995 to March 31, 1996
(b) Area charges are no longer collected separately. Area charges were incorporated into the minimum charge which is part of the funds payable to the Consolidated Revenue Fund.
(c) Includes conversion funds of $4,428,900 collected in 1997-98
(d) Includes conversion funds of $8,418,167 collected in 1998-99
(e) Includes conversion funds of $1,640,892 colected in 1999-00
(f) Amounts are as of March 31, 2000

Note: Funds in the Forest Renewal Trust, the Forest Renewal Special Purpose Account, and the FFT are not formally counted as revenue by the province, although funds in the Forest Renewal Special Purpose Account are held in the province's Consolidated Revenue Fund.

Chapter 5

Forest Disturbances

Forest management attempts to regulate or adapt to "disturbances" within the forest caused by natural (e.g., insects, disease, weather calamities, forest fires) and human (e.g., harvesting) activities. These disturbances are numerous and occur throughout the forest life cycle, illustrated in Figure 4.

Disturbances are measured in terms of forest area (hectares) and volume (cubic metres) of trees killed, damaged, or harvested. The degree to which a forest stand must be impacted by these disturbances before the inventory description is changed is a subjective decision. The change in volume and area in a forest stand that results from natural mortality every year is not usually significant enough to be recorded for inventory update purposes. For example, chronic diseases such as root rot may kill only a few trees scattered throughout the forest stand. Therefore, no area loss is recorded for this disease but an estimate of the volume of wood in the dead trees and volume of growth loss in the remaining live trees will be made. The most significant disturbances are reported in the fall of the year following

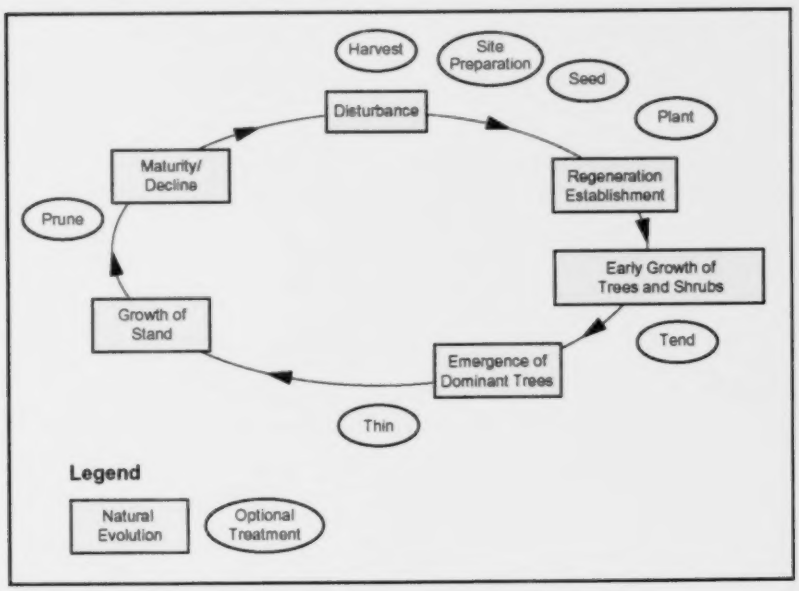


Figure 4
The Forest Life Cycle

a disturbance. Thus, the most recent disturbances reported in this 1999/00 report actually occurred during 1998/99. Reporting is delayed to allow time to completely map and inventory all disturbances that occurred during a given year.

Harvesting

The level of allowable harvest in a management unit is determined through the forest management planning process. Ministry of Natural Resources requires that the allowable harvest for a management unit be set at a level that will sustain a healthy forest over time. Harvesting in each management unit is controlled and monitored according to the approved forest management plan. These plans specify both allowable harvest area and the associated volumes. However, control of the allowable harvest is by area.

Silvicultural Systems Used in Ontario

Harvesting in Ontario is one of a series of actions that, when combined, represents a silvicultural system. Silvicultural systems combine harvesting, forest renewal, and tending and are classified according to the method of harvesting. Ontario uses three silvicultural systems:

Clearcut System

The entire merchantable growth is harvested in one operation, with or without leaving seed trees. Harvesting may be done in blocks, strips, or patches. Regeneration can be natural or assisted. This method will produce stands in which all the trees are at about the same period of growth, or age-class, and is referred to as even-aged management.

Shelterwood System

Mature trees are harvested in a series of two or more cuts to encourage natural regeneration under the residual trees. This may be done by cutting uniformly over the stand area or in groups or narrow strips. This method also produces stands in which the trees are approximately the same age.

Selection System

Mature and unhealthy or undesirable trees are continuously removed individually or in small groups over an entire area, over the forest life cycle. This method produces stands in which trees are of different ages and is referred to as uneven-aged management.

The breakdown of the total provincial area harvested in 1997/98 and 1998/99 by the three silvicultural systems is illustrated in Figure 5. This

figure shows that the overall total harvest area decreased in 1998/99 from 1997/98 by about 16,900 hectares, predominately in the area managed using the clearcut silvicultural system. Part of the reduction was caused by decreasing amounts of salvage harvesting. When large areas are burned or destroyed by windthrow or insects, forest companies often harvest some of the dead and damaged wood remaining on these sites. In 1998/99, about 4,200 hectares were salvaged while in 1997/98 there were about 8,300 hectares salvaged.

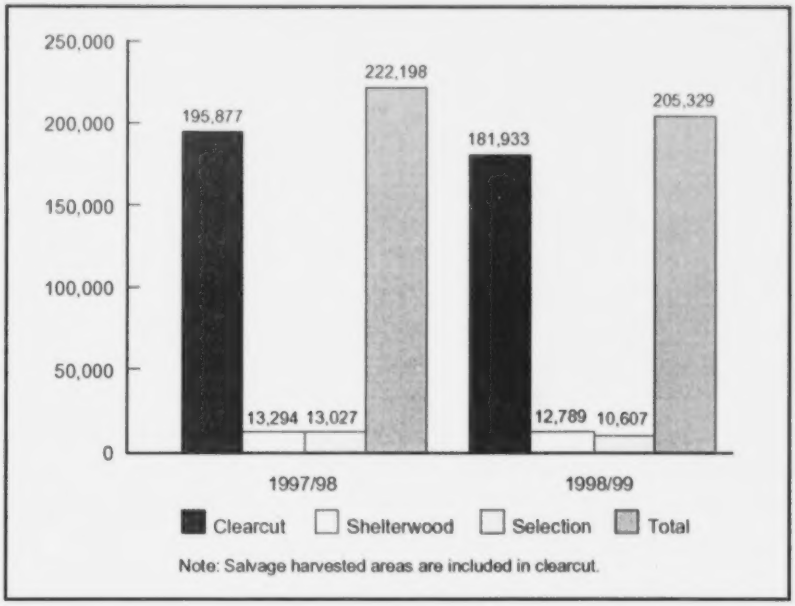


Figure 5

Harvest Area (hectares) by Silviculture System (1997–1999)

Figures 6 and 7 show provincial harvest areas and volumes, including fire and other disturbances, from 1994 to 1998. The annual area harvests were at their lowest level in 1998 (205,329 hectares) and were greatest in 1997 (222,198 hectares). The annual volume harvests were at their lowest level in 1994 (20.7 million cubic metres) and were greatest in 1997 (22.2 million cubic metres). Since the recession in 1993, demands for products and harvest levels have rebounded and continue to reflect changing market conditions. Comparisons of natural and human disturbances to the forest over the five-year period from 1994 to 1998 are also shown in Figures 6 and 7.

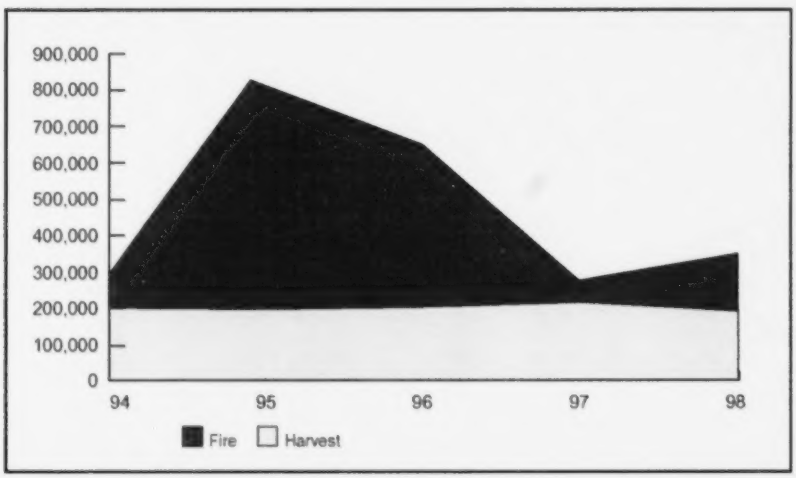
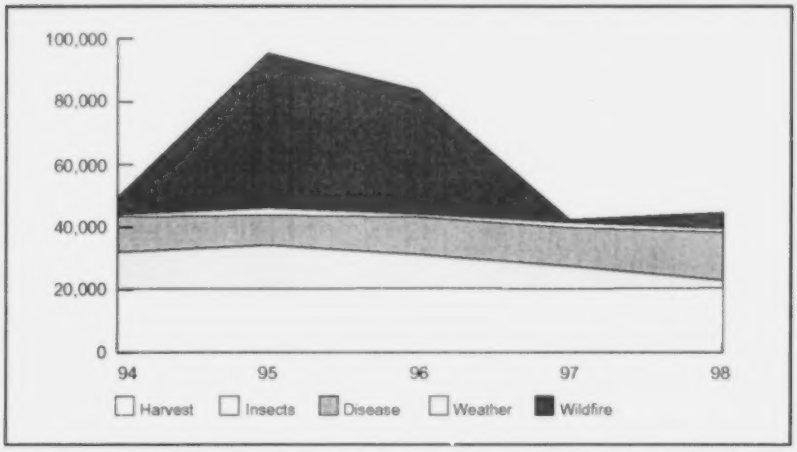


Figure 6

Forest Area (hectares) Disturbed by Harvest and Fire for all Crown Land (1994–98)

Figure 7

Wood Volume (000's cubic metres) for Harvest and Other Disturbances for the Planning Area (1994–98)

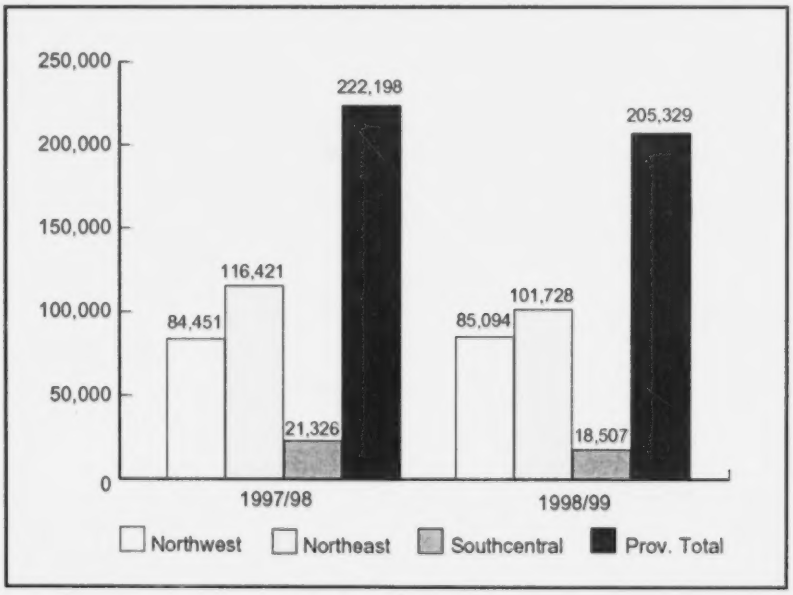


Source: MNR and Canadian Forest Service Forest Health Monitoring Partnership

Figure 8 shows the total area harvested in 1997/98 and 1998/99 by MNR administrative region. The total provincial harvest area of 205,329 hectares decreased by about eight percent from 1997/98 to 1998/99. The largest regional harvest area was in Northeast Region (101,728 hectares), representing approximately 50 percent of the total. The Northwest Region had the second largest regional harvested area at 85,094 hectares, or 41 percent of the total. The Southcentral Region, which has a much smaller forest area, had the smallest total harvest at 18,507 hectares, or nine percent of the total. The regional breakdown of the harvest changed very little from 1997/98 to 1998/99.

Figure 8

Area Harvested (hectares) by MNR Region (1997–1999)



Wood volumes harvested in 1998/99 in MNR's three administrative regions are shown in Figure 9. Total provincial softwood and hardwood volumes harvested in 1997/98 and 1998/99 are shown in Figure 10.

In 1998/99, the total provincial harvest volume was approximately 21.3 million cubic metres. The 1998/99 regional total harvest volumes were:

- Northwest Region – 9.7 million cubic metres (46 percent of the total harvest volume)
- Northeast Region – 10.4 million cubic metres (49 percent of the total harvest volume)

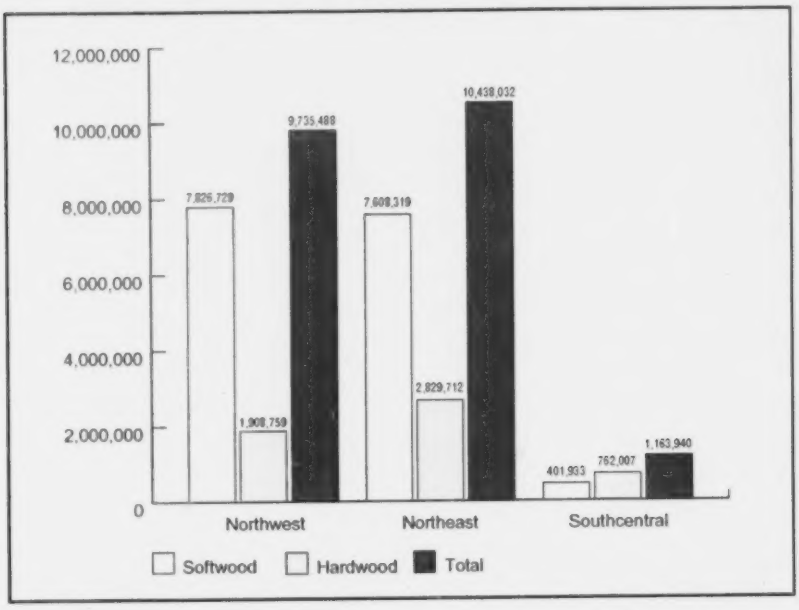


Figure 9

Wood Volume Harvest (cubic metres) by MNR Regions and Species Group (1998–99)

- Southcentral Region – 1.2 million cubic metres (5 percent of the total harvest volume)

Softwood tree species accounted for 74 percent of the total harvest volume with a total harvest of over 15.8 million cubic metres. This is a seven percent decrease over the 1997/98 softwood harvest. The 1998/99 regional softwood harvests were:

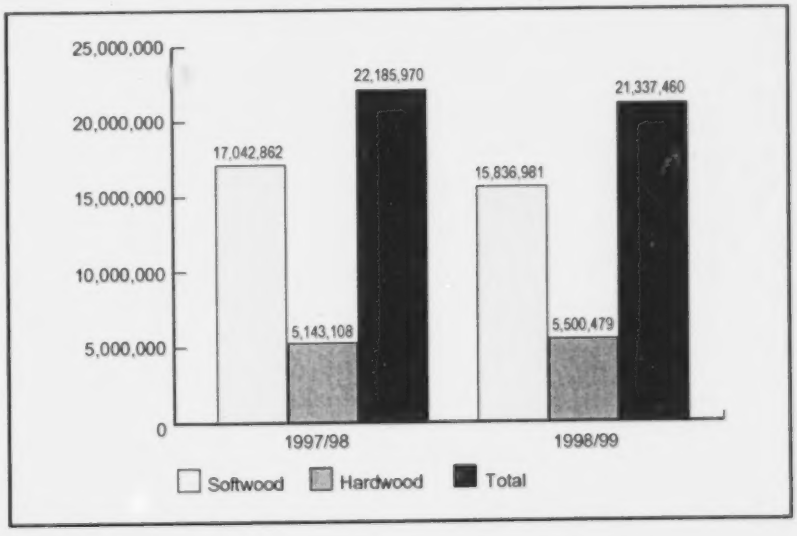
- Northwest Region – 7.8 million cubic metres
- Northeast Region – 7.6 million cubic metres
- Southcentral Region – 401,933 cubic metres

The total provincial hardwood harvest volume of over 5.5 million cubic metres accounts for 26 percent of the total harvest volume. This is an eight percent increase from the 1997/98 hardwood harvest. The 1998/99 regional harvest volumes for hardwoods were:

- Northwest Region – 1.9 million cubic metres

Figure 10

Hardwood and Softwood Volumes Harvested (cubic metres) on all Crown Land (1997–1999)



- Northeast Region – 2.8 million cubic metres
- Southcentral Region – 762,007 cubic metres

Ontario's forest harvest in 1998/99 was approximately 21.3 million cubic metres, which represents approximately a three percent decrease over the 1997/98 harvest volume. This decrease is mainly due to decreases in the harvest of spruce (mostly black spruce), jack pine, other softwood, and balsam fir species. Fluctuations in the harvest volumes of individual tree species from year to year are in large part due to changes in market demand and variations in the species encountered on the areas to be harvested. The harvest volumes by species for 1997/98 and 1998/99 are shown in Table 5.

Table 5

Provincial Harvest Volume (cubic metres) by Species (1997–1999)

Softwood Species	1997/98 Harvest	1998/99 Harvest
White Pine	400,378	428,476
Red Pine	212,210	228,838
Jack Pine	6,249,545	5,967,239
Spruce	9,311,204	8,632,913
Hemlock	11,845	15,874
Balsam	642,314	524,967
Cedar	5,950	11,541
Tamarack	15,108	24,940
Other Softwoods	194,308	2,193
Total Softwoods	**17,042,862**	**15,836,981**
Hardwood Species		
Maple	544,081	432,590
Yellow Birch	51,754	35,137
White Birch	238,855	265,682
Oak	22,950	39,224
Beech	34,264	30,730
Poplar	4,168,609	4,635,851
Basswood	13,730	12,981
Ash	3,297	3,134
Other Hardwoods	65,568	45,150
Total Hardwoods	**5,143,108**	**5,500,479**
Provincial Totals	**22,185,970**	**21,337,460**

Average and Maximum Size of Clearcuts

The CFSA promotes "using forest practices that within the limits of silvicultural requirements, emulate natural disturbances and landscape patterns while minimizing adverse effects on plant life, animal life, water, soil, air, and social and economic values, including recreational values and heritage values". The document entitled *Forest Management Guide for Natural Disturbance Pattern Emulation* (formerly Fire Simulation Guidelines) is under development and will provide consistent direction for considering natural disturbances and landscape patterns. The Timber Class EA decision provides for a range of clearcut sizes, not to exceed 260 hectares unless supported by biological or silvicultural reasons.

The Timber Class EA decision also recognized the need to make exceptions above the 260 hectare limit for biological and silvicultural reasons and that a range of various sizes was required. The CFSA embraces the principle to "emulate natural disturbances and landscape patterns." This evolving approach is necessary to provide a more natural landscape pattern which provides a range of sizes of disturbances to provide habitat for all wildlife species. Some species (e.g., moose, deer) thrive under a pattern of small disturbances while other species (e.g., caribou, American marten) require large uniform forests.

Efforts to prepare plans to address the need to provide a range of disturbance sizes have resulted in generally larger planned clearcuts with appropriate rationale provided in forest management plans.

Cut patterns, sizes, and distribution are developed based on 29 guidelines in accordance with natural conditions, historical disturbance and landscape patterns, forest types, silvicultural characteristics of tree species, and fish and wildlife habitat needs. When appropriate, forestry operations within cut blocks are further altered or prohibited to protect identified site-specific forest values by implementing measures (e.g., reserves and harvest restrictions) specified in the guidelines.

In this report, the area statistics for average and maximum size clearcuts generally refer to the area cut in a particular year, without consideration of harvests in previous years or nearby clearcuts.

Boreal Forest

Key guidelines used to design clearcut sizes and patterns within the Boreal Forest include: *Timber Management Guidelines for the Provision of Moose Habitat* and *Forest Management Guidelines for the Conservation of Woodland Caribou: A Landscape Approach.*

The provision of moose habitat includes direction for range management and specific management for values such as aquatic feeding areas. In the northwestern part of the province, in locations where significant woodland caribou populations occur, application of the woodland caribou guidelines takes precedence over moose habitat guidelines for determination of clearcut size.

In 1998/99, 43 management units within the Boreal Forest reported average clearcut sizes from 19 to 444 hectares. Maximum clearcut sizes reported ranged from 54 to 822 hectares, with two units reporting exceptional maximum size clearcuts of 1,639 and 2,924 hectares.

Great Lakes-St. Lawrence Forest

The provision of deer habitat, including shelter and food sources, particularly for winter concentration areas, is a key consideration when designing harvest sizes and patterns in the Great Lakes-St. Lawrence Forest. The silvicultural characteristics of the tree species in this region and the habitat requirements for deer normally result in relatively small harvest blocks. Approximately 25 percent of the harvested areas are cut using the clearcut method, 30 percent are harvested using the shelterwood method, and the remainder are harvested through the selection system.

In 1998/99, 13 management units within the Great Lakes-St. Lawrence Forest reported average clearcut size ranges from 10 to 87 hectares. Maximum clearcut sizes reported ranged from 21 to 224 hectares.

Natural Disturbances

Natural disturbances include fire disturbances and damage from insects, disease, and severe weather conditions. The intensity of disturbances varies from year to year.

Forest Fires

The number and size of forest fires varies dramatically from year to year, depending on the weather. This is clearly indicated in Figure 6. Ministry

of Natural Resources records the area disturbed by forest fires across all the forested area of the province, not just for the AOU as is the case for harvest depletions. During the period 1994-1998, annual fire disturbances peaked in 1995 at more than 611,000 hectares of forest burned. The smallest annual area disturbed by fire in that period occurred in 1997 when 37,712 hectares were burned.

The total fire disturbance for 1998/99 within the AOU amounted to 80,953 hectares. This represents about 51 percent of the total provincial forest area burned that year. The other 49 percent occurred outside the AOU, mostly in the far north.

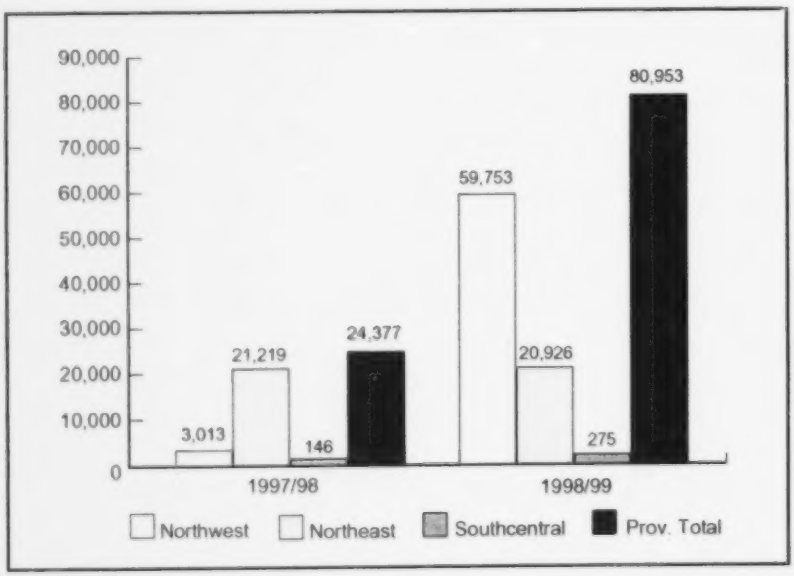
Depending on the severity of the damage to trees from fire, it is often possible to conduct salvage operations to harvest killed or damaged trees. Salvage operations are reported as harvesting.

Figure 7 shows the estimated volume of wood lost to forest fires from 1994/95 to 1998/99 in comparison with harvest volumes and volume losses caused by insects, disease, and weather. Fire volume losses over this period correspond closely with fire area losses. Fire volume losses peaked in 1995 at more than 46.0 million cubic metres. The smallest annual fire loss occurred in 1997 when 1.8 million cubic metres were burned.

Figure 11 shows the area disturbed by forest fires during 1997/98 and 1998/99 in the AOU by administrative region. The total area burned in 1998/99 increased to 80,953 hectares from 24,377 hectares in 1997/98. 74 percent of the area burned within the AOU in 1998/99 was within the Northwest Region.

Figure 11

Area Disturbed by Forest Fire (hectares) by MNR Region (1997–1999)



Insects, Disease, Severe Weather

Estimates of volumes lost from 1994 to 1998 due to insects, disease, severe weather, and forest fires are shown in Figure 7. These estimates pertain to Crown production forest within the Planning Area only. This figure shows that insect losses were at their lowest in 1998 (over 5.8 million cubic metres) and at their highest in

1995 (over 11.8 million cubic metres). The magnitude of these losses has not been adjusted to reflect abnormal impacts from losses which have always been a part of natural forest growth and succession.

The volume losses due to tree mortality caused by insects, disease, and severe weather (e.g., drought, windstorm) shown in Figure 7 are based on studies done for the years 1988 to 1999 by the Forest Health Monitoring Unit of the Canadian Forestry Service and MNR. Mortality and growth losses in surviving trees are included in the estimates. Depending on the severity of damage to trees from insects, disease, or severe weather, it is often possible to conduct salvage operations to harvest timber and reduce the threat of forest fires.

The wood volumes estimated to have been lost in 1997/98 and 1998/99 by natural causes are given in Table 6.

Table 6

Estimated Wood Volumes Lost to Natural Causes on Crown Production Forest Within the Planning Area

Disturbance Type	1997/98 Volume Losses (cubic metres)	1998/99 Volume Losses (cubic metres)
Insects	7,764,700	5,813,900
Disease	12,862,100	12,740,700
Severe Weather	1,481,700	271,200
Total	**22,108,500**	**18,825,800**

Insect Damage

The damaged area and volume loss caused by the most destructive insects are based on estimates of forested areas on which 30 percent or more of the foliage was removed. Usually, a number of years in which defoliation occurs is required to kill a tree; this varies for each pest, the tree species being attacked and other factors. Insects that do significant damage to Ontario's forests include the spruce budworm, the jack pine budworm, the forest tent caterpillar, and the gypsy moth. The estimated volume losses in 1997/98 and 1998/99 due to mortality and growth losses for each of these insects are given in Table 7.

Table 7

Estimated Volume Losses by Insect Species within the Planning Area

Insect	1997/98 Volume Losses (cubic metres)	1998/99 Volume Loss (cubic metres)
Spruce Budworm	7,206,900	5,208,500
Jack Pine Budworm	25,200	0
Forest Tent Caterpillar	422,000	564,600
Gypsy Moth	0	0
Total	**7,654,100**	**5,773,100**

Forested areas may be defoliated by more than one insect. Area reported as defoliated may include different degrees of severity.

Diseases

Losses due to disease are shown to be relatively consistent over the period because these losses are normally chronic and are estimated by calculating an annual average loss for all chronic diseases over specific study periods (i.e., 1988-1997 and 1998-1999). The annual volume losses over the 1988 to 1997 period were over 12.8 million cubic metres. Annual volume losses over the 1998 to 1999 period were over 12.7 million cubic metres. The estimates shown of volume loss caused by chronic disease damage are annualized averages based on estimates of mortality and growth loss caused by root rot, stem decay, and foliage dieback.

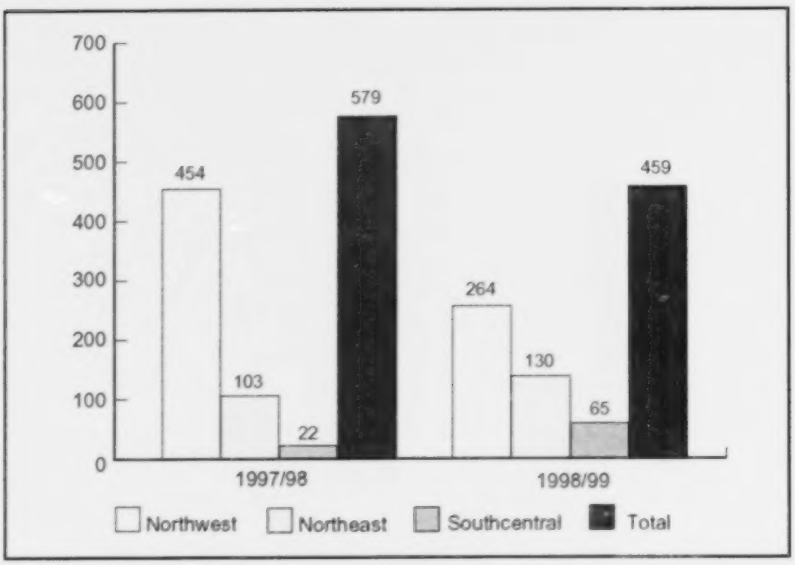
Severe Weather

The most common weather disturbances causing significant tree mortality and volume losses are windstorms (damage is commonly referred to as "blowdown") and drought. Reported severe weather volume losses from 1994 to 1995 were caused by drought. Weather-related volume losses were less than 22,000 cubic metres in 1994, peaked in 1995 through 1997 and then dropped off significantly in 1998. The maximum annual estimated loss from 1995 to 1997 was 1.8 million cubic metres.

Windstorms occur periodically but must affect a sizable area in order to be recorded. The areas reported as being damaged by windstorms in 1997/98 and 1998/99 are shown in Figure 12, by administrative region. The total area damaged in 1998/99 was about 459 hectares, which was a slight decrease from the total of 579 hectares reported in 1997/98. These figures were reported by individual management units and are not part of the volume estimates provided by the forest health surveys.

Figure 12

Windstorm Damaged Area (hectares) by MNR Region (1997–1999)



The Ice Storm of '98

In January 1998, the worst ice storm in recent memory swept across eastern Ontario, leaving downed power lines and a broken and heavily-damaged forest in its wake. From January 4 to 9, freezing rain continually blanketed eastern Ontario; in some areas, as much as 3.5 inches of rain fell in a 24-hour period. Woodlots that contained early successional species such as trembling aspen, hybrid poplar, and white birch suffered severe damage. The damage to the other hardwoods was variable and patchy. Some stands were completely stripped of their fine and main branches while other areas suffered relatively little damage. A map showing the extent and varying severity of damage to hardwoods across eastern Ontario is shown in Figure 13.

The extent of the damage to conifers varied from species to species, hitting red pine plantations and eastern white cedar the hardest. Eastern white pine, white spruce, and balsam fir suffered relatively little damage.

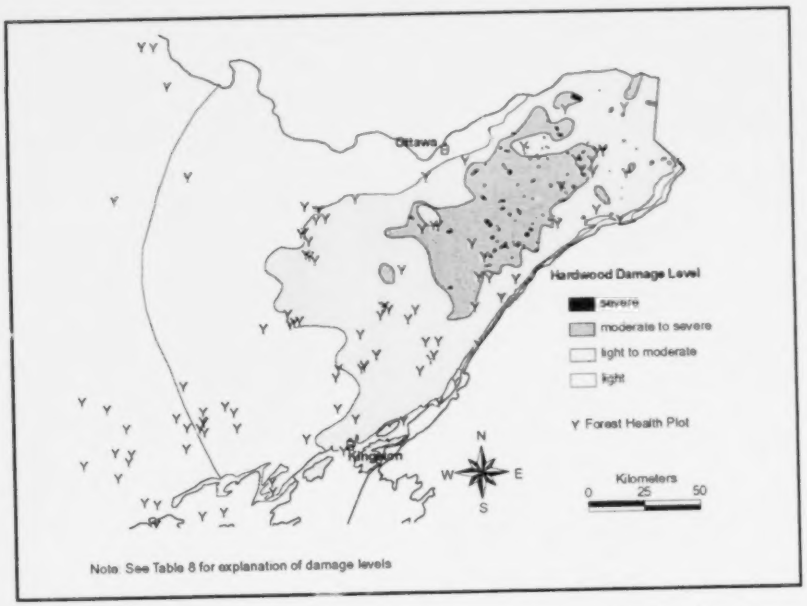


Figure 13
Map of Eastern Ontario Showing Area and Severity of Ice Storm damage to Hardwoods

In total, over 600,000 hectares of forest were damaged by the ice storm. Most of this damage occurred on private land and, therefore, was not included in previously listed severe weather statistics. The area by forest type and severity of damage is summarized in Table 8.

Table 8

Area of Forest Affected by Ice Damage (hectares)

Forest Type	Damage Level				
	Severe	Moderate and Severe	Moderate	Light and Moderate	Total
Deciduous	3,160	78,774	189,521	93,920	**365,375**
Mixed Forest	838	25,363	80,344	81,269	**187,814**
Sparse Forest	131	9,880	21,282	19,172	**50,465**
Conifer	1,130				**1,130**
Total	**5,259**	**114,017**	**291,147**	**194,361**	**604,784**

Source: Canadian Forest Service

Notes:

Severe:	50 to 100% of trees with greater than 75% crown damage
Moderate/severe:	at least 75% of trees with 25 to 75% damage (25% having greater than 75% crown damage)
Moderate:	100% of trees with 25 to 75% damage (few having greater than 75% crown damage)
Light/moderate:	scattered pockets of less than 25% crown damage

See Figure 13 for a map showing extent of each damage.

The storm damage led to a variety of economic and ecological questions from governments, concerned members of the public, and stakeholder groups. The MNR, working with other organizations (e.g., Ontario Ministry of Agriculture, Food and Rural Affairs, Canadian Forest Service, Eastern Ontario Model Forest, universities), has developed short and longer term responses to these questions. Efforts have already produced :

- A low-level aerial survey of the forests that were damaged
- Extension notes for homeowners, landowners, maple syrup producers, plantation owners, natural resource agencies, and municipalities
- Information for media and natural resource education groups
- Standardized techniques and training for assessing damage and making recommendations
- Literature reviews and synthesis
- Management guidelines

Continuing research will develop new knowledge related to ice damage and potential remedial treatments.

Chapter 6

Forest Renewal and Maintenance

Under the terms of the CFSA, forest managers have the responsibility to fully renew the forests where they operate. Sustainable Forest Licence holders are required to ensure that areas harvested are renewed to specific silvicultural standards as established in forest management plans, to ensure the long term health of Crown forests.

Renewal

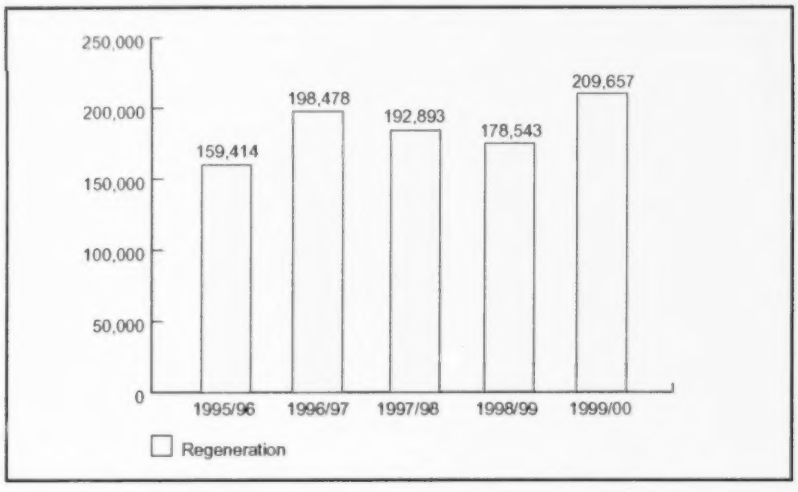
Activities needed to ensure the successful regeneration of all harvested areas are specified in all approved forest management plans in Ontario. Crown forests are renewed by both assisted and natural regeneration techniques, and these activities are reported annually.

The two most common types of assisted regeneration are planting and seeding. Planting includes planting of bareroot seedlings, container seedlings, or cuttings. Seeding may be done directly from aircraft or by broadcast seeders on the ground. Renewal activities also include preparing an area disturbed by harvest or natural causes for regeneration through mechanical or chemical means, or by a prescribed burn. The time period from harvest to completion of the planting or seeding may be up to five years, and is often referred to as the regeneration establishment period.

Many tree species can reestablish themselves on a site without planting or seeding. These natural mechanisms include seeding from the adjacent forest, suckering of stumps and roots, and growth of young trees remaining on the harvested area. This natural regeneration can be enhanced through careful selection of the silviculture system and harvest method (see Chapter 5) and commences immediately after harvesting is complete.

In the past, reporting of natural regeneration annually at the time of harvest was not emphasized because some forest managers preferred to report it periodically after regeneration surveys had been completed. This delay in reporting, plus the regeneration establishment period, has resulted in the reported annual renewal levels being substantially less than the reported annual harvest levels. In 1996, new reporting procedures came into effect that require natural regeneration to be reported promptly upon completion of the harvest.

Figure 14
Provincial Forest Regeneration (hectares) 1995–2000



Reported levels of regeneration (including both natural and assisted regeneration) over the years 1995/96 to 1999/00 are shown in Figure 14. Regeneration levels tend to follow fluctuations in harvest and, to a lesser degree, forest depletions from natural causes such as forest fires and insect epidemics. The provincial forest regeneration level of 209,657 hectares shown in 1999/00 is the highest over the last five years. Previously, the highest regeneration level was in 1996/97 when it reached 198,478 hectares.

Comparison of reported harvest and regeneration levels on an annual basis is not appropriate because of the regeneration establishment period and the reporting delay. Comparison of average harvest and regeneration levels over a five-year period is more appropriate, but it will require several years before the new reporting requirements in Ontario make this comparison meaningful. The information is included here for baseline tracking purposes. The average total provincial harvest area over the five-year period from 1993/94 to 1997/98 was approximately 213,000 hectares. The average total provincial regeneration level over the five-year period from 1995/96 to 1999/00 was approximately 188,000 hectares, or about 12 percent less than the average harvest level. More complete reporting requirements should result in regeneration levels growing closer to harvest levels over the next few years.

Table 9 summarizes the renewal operations conducted on Crown land in 1999/00 for the province and for each MNR region. The area renewed in 1999/00 includes areas harvested and burned in 1998/99 or earlier.

Table 9

Provincial Renewal Operations (1999/00)

REGENERATION	Northwest	Northeast	Southcentral	Total
UNEVEN-AGED MANAGEMENT				
Selection cut (hectares)	0	2,268	7,496	**9,764**
Total uneven-aged management	0	2,268	7,496	**9,764**
EVEN-AGED MANAGEMENT				
Natural regeneration (hectares)				
Clear cut	23,384	49,318	2,108	**74,810**
Strip cut	2,102	0	0	**2,102**
Seed tree cut	2,276	1,018	0	**3,294**
Uniform shelterwood cut	0	1,787	3,525	**5,312**
Subtotal natural regeneration	27,762	52,123	5,633	**85,518**
Assisted (artificial) regeneration				
Planting (hectares)	43,831	47,755	1,370	**92,956**
Trees(000's)				
Bareroot	6,145	1,963	352	**8,460**
Container	61,290	62,778	971	**125,039**
Cuttings	0	0	0	**0**
Seeding (hectares)				
Direct	11,609	3,234	0	**14,843**
With site preparation	4,353	1,633	2	**5,988**
Scarification (hectares)	173	59	356	**588**
Subtotal Assisted Regeneration (hectares)	59,966	52,681	1,728	**114,375**
TOTAL REGENERATION (hectares)	**87,728**	**107,072**	**14,857**	**209,657**
SITE PREPARATION (hectares)				
Mechanical	41,827	36,748	1,867	**80,442**
Chemical	4,700	7,484	340	**12,524**
Prescribed burn	670	136	0	**806**
TOTAL SITE PREPARATION (hectares)	**47,197**	**44,368**	**2,207**	**93,772**
TOTAL RENEWAL ACTIVITIES (hectares)	**134,925**	**151,440**	**17,064**	**303,429**

Selection cutting shown in Table 9 was carried out in tolerant hardwood stands in the Southcentral and Northeast Regions to a lesser degree in 1999/00 than in 1998/99. Clearcutting took place mainly in jack pine, black spruce, poplar, and white birch in the Northeast and Northwest Regions. Strip cutting was carried out mostly in black spruce stands in the Northwest Region and the seed tree system was primarily applied in white pine stands in the Northwest and Northeast Regions. Uniform shelterwood was used mainly in both white pine and tolerant hardwood stands in the Northeast and Southcentral Regions.

The area of natural regeneration reported was significantly higher in1999/00. The largest change for area reported as clearcut with natural regeneration is in the Northwest Region. Overall, the higher natural regeneration area from clearcuts offsets any reductions in 1999/00 in natural regeneration area from seed tree cuts and uniform shelterwood cuts in the Northeast and Southcentral Regions.

Assisted regeneration activities were also slightly higher compared to the previous year, particularly in the Northwest and Northeast Regions. The Southcentral Region had a reduction in assisted regeneration. The use of bareroot seedlings further decreased in 1999/00, and made up only six percent of the total planting activity in the province. Container stock was used in the other 94 percent of the program. This follows the continued industry trend towards the increased use of container stock to meet planting requirements. The total number of seedlings planted in 1999/00 was about 133.5 million trees, which was almost equal to 1998/99 levels. The area planted however, increased from 1998/99 to 1999/00 by about 10 percent to 92,956 hectares. The increase in assisted regeneration area, while utilizing the same amount of trees as in the previous year, is most probably due to the use of available natural regeneration on treated sites. Jack pine is the main species used for seeding, most of which was done in the Northwest Region and, to a lesser extent, in the Northeast Region. The overall seeding levels were slightly lower in 1999/00 than in 1998/99, except for seeding areas following site preparation. Total regeneration (both assisted and natural) increased in 1999/00 compared to 1998/99.

Mechanical site preparation is the main site preparation method used in all regions followed by chemical site preparation then prescribed burn. Provincially, the area treated by all three methods increased in 1999/00 over 1998/99. Increased area treated mechanically and chemically in the Northeast and Southcentral Regions offset reduced area treated by the same methods in the Northwest Region. No prescribed burns were carried out in

the Southcentral Region in 1999/00 due in part to the high cost of the burns as a result of the small size of areas normally treated in the Region.

Tending and Protection

Forest tending operations are carried out to improve the survival, growth or quality of a regenerating forest. Tending may be done in young stands to help attain Free-To-Grow (FTG) status. Tending may also be conducted in uneven-aged stands to maintain the desired age-class distribution and volume. Protection operations prevent or manage the damage caused by insects and diseases.

Table 10 summarizes the tending and protection activities conducted on Crown land in 1999/00 for the province and for each MNR region. Reported levels of tending were down four percent in 1999/00 from 1998/99.

Table 10

Provincial Tending and Protection Activities for 1999/00

TENDING (hectares)	Northwest	Northeast	Southcentral	Total
Cleaning				
Manual	253	818	2,129	**3,200**
Chemical -ground	1,787	1,865	128	**3,780**
Chemical - aerial	27,621	49,765	134	**77,520**
Mechanical	0	30	0	**30**
Spacing, Precommercial Thinning, Improvement Cutting (hectares)				
Even-aged	8,183	2,569	1,005	**11,757**
Uneven-aged	0	1,199	6,521	**7,720**
TOTAL TENDING	**37,844**	**56,246**	**9,917**	**104,007**

PROTECTION (hectares)	
Accelerated Harvest	**0**
Salvage	**0**
Manual Protection	**0**
Ground Insecticide	**0**
Aerial Insecticide	**0**
TOTAL PROTECTION	**0**

Bareroot stock: Seedlings that have been grown in an outdoor environment and in the soil of a compartment in a nursery. These seedlings are lifted and the soil removed from the roots prior to shipment for planting.

Container stock: Seedlings, usually grown in a controlled environment such as a greenhouse, that are grown in some form of pot. These seedlings, when shipped for planting, retain the growing media around their roots.

Site preparation: Disturbance of the forest floor and upper soil horizons, and vegetation to create suitable conditions for assisted regeneration by mechanical or chemical means or by prescribed burning.

Scarification:
Mechanical preparation of a site for natural regeneration.

Prescribed burn:
The knowledgeable application of fire to a specific land area to accomplish predetermined resource management objectives.

Cleaning:
A manual, mechanical or chemical operation in a young stand to reduce, eliminate, or suppress undesirable competing vegetation. Cleaning promotes survival and growth in desirable trees by removing competing vegetation of similar age that may overtop them or are likely to do so.

Improvement cutting:
The elimination or suppression of less desirable trees in favour of more desirable trees, typically in a mixed, uneven-aged stand.

The total area tended decreased in 1999/00, mainly due to decreased manual cleaning treatments and even-aged spacing, precommercial thinning, and improvement cutting across all regions of the province. In addition, less chemical ground cleaning was carried out in the Northwest and Southcentral Regions and less chemical aerial cleaning was done in the Southcentral Region. Uneven-aged stand improvement work increased slightly in 1999/00 in the Northeast and Southcentral Regions, with most of this type of work done in the Southcentral Region in tolerant hardwoods. No protection activity was recorded in 1999/00.

Funding for Forest Renewal

The financial mechanisms established under the CFSA and outlined in Chapter 4 ensure that there will always be funding available for forest renewal.

Each company with an SFL contributes the appropriate level of renewal charges to an account in the Forest Renewal Trust fund. These funds may only be used to conduct eligible silviculture work on the specific licence area from which the funds were generated upon harvest.

Operators with an FRL, who do not operate on an SFL, pay their renewal charges into the Forest Renewal Special Purpose Account. This account provides dedicated funding for forest renewal on management units where harvesting and other operations are conducted on Crown land by companies that do not hold SFLs.

Ministry of Natural Resources is responsible for the administration of the Forest Renewal Special Purpose Account. As with the Forest Renewal Trust fund, each forest or management unit has its own separate account to cover forest renewal costs.

Money for a third fund, the FFT, came in 1999/00 from a portion of the Crown charges that all licensees paid. In addition, any administrative penalties assessed under the CFSA are paid into the FFT.

The FFT, managed by an independent committee established by the Crown, funds projects that meet MNR-approved criteria. To qualify, projects must be: a silvicultural activity on Crown land that addresses renewal of trees killed or damaged by fire; renewal of land where a licensee becomes insolvent; forest protection from insect or disease infestation; or, intensive stand management related to a critical wood supply.

The annual contributions to the FFT are summarized in Figure 15. The amounts shown through 1999/00 are actual values. The funds deposited to

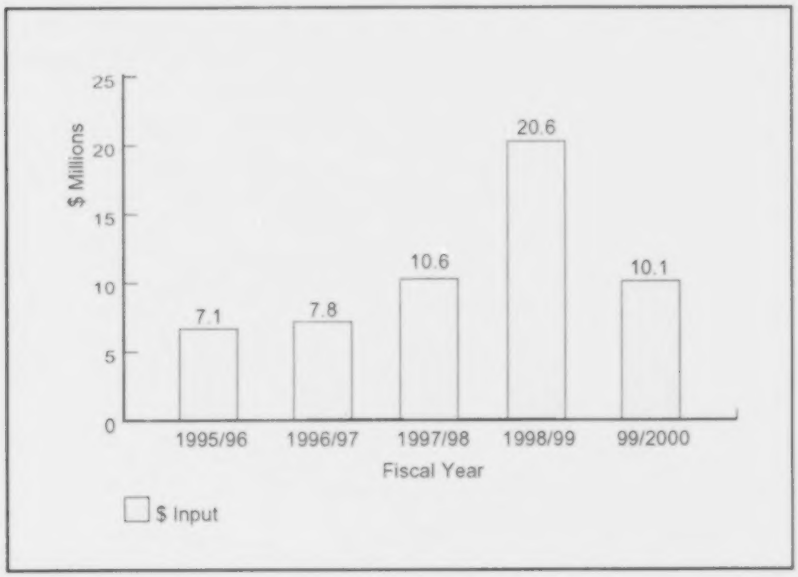


Figure 15
Forestry Futures Trust Fund: Annual Funds Input as of April 1, 2000

the FFT fund in 1999/00 amounted to about $10.1 million (includes $1.6 million in conversion funds).

Transition funding is provided by MNR to the Forest Renewal Trust accounts and Forest Renewal Special Purpose Accounts to provide an adequate level of "start-up" capital and to ensure ongoing viability of the accounts.

In addition to these trust funds and special purpose accounts, money was directed from the provincial treasury to MNR-supported forest renewal through the operation of the Ontario Tree Seed Plant and tree improvement programs.

Total forest renewal expenditures in 1999/00 were $102.7 million, which was approximately an eight percent decrease over the previous fiscal year. Sources of these expenditures were:

- Direct MNR expenditures $0.9 million
- Forest Renewal Trust fund $88.9 million
- FFT fund $10.4 million
- Special Purpose Account $2.5 million

In 1999/00, some adjustments to renewal rates took place on individual management units to reflect the local costs of renewing various species and to reduce some accumulated surpluses. Renewal rates for two new

Thinning:
A cutting made in an immature stand to accelerate growth of the trees left uncut. The goal is to foster quality growth and improve sanitation.

Commercial thinning:
Removing trees from a developing young stand, so that the remaining trees will have more growing space, dead and dying trees will be salvaged, and the operation will make a net profit.

Pruning:
The removal of live or dead branches from a standing tree.

species groups were also introduced for the first time. Two of the species groups were split into two separate groups. The white and red pine group now has different rates based on Grade 1 and Grade 2 log quality. The conifer group, which in the past was all other coniferous species other than red and white pine, now also excludes hemlock and cedar. Hemlock and cedar are now a separate group. These rates will continue to be reviewed and adjusted annually to ensure adequate levels of renewal are maintained. A complete listing of the 1999/00 renewal rates for each management unit is provided in Appendix 5.

Chapter 7

Forest Access

Most forest access roads on Crown land are planned, constructed, and paid for by the forest industry. The forest management plan for each management unit describes the location, construction, maintenance, and use management of access roads that exist or are planned for construction. These roads are essential for carrying out forest management activities. They also provide public access to provincial Crown land for tourism, outdoor recreation, mining, and other activities.

This report provides information on the construction of primary and secondary forest access roads. It provides information on road maintenance activities, which include grading, snow plowing, realignments, flood repairs, bridge repairs, and any other activity necessary to maintain existing roads. This chapter also reports on controlling access to roads, implementation of abandonment measures, and how this work was funded.

Road Construction and Maintenance

Figure 16 shows total provincial road construction in 1999/00 for primary and secondary forest access roads in each MNR region. Total primary and secondary road construction for 1999/00 amounted to approximately 528 kilometres, which is about a 37 percent decrease from the 1998/99 construction total of 840 kilometres. There were 123 kilometres of primary roads constructed in the province and 405 kilometres of secondary roads.

Figure 17 shows total provincial road maintenance in 1999/2000 for each MNR region. Total road maintenance for the year was carried out on approximately 15,645 kilometres of primary and secondary roads, which is about a two percent decrease over the 1998/99 total of 15,952 kilometres.

In 1999/00, the forest access road program, funded by MNR, reconstructed 72 kilometres of roads and maintained 205 kilometres of forest access roads in northern Ontario at a cost of $1.8 million. Most of the roads funded under MNR's program serve several purposes, including public access and forest management.

ROAD CLASSES

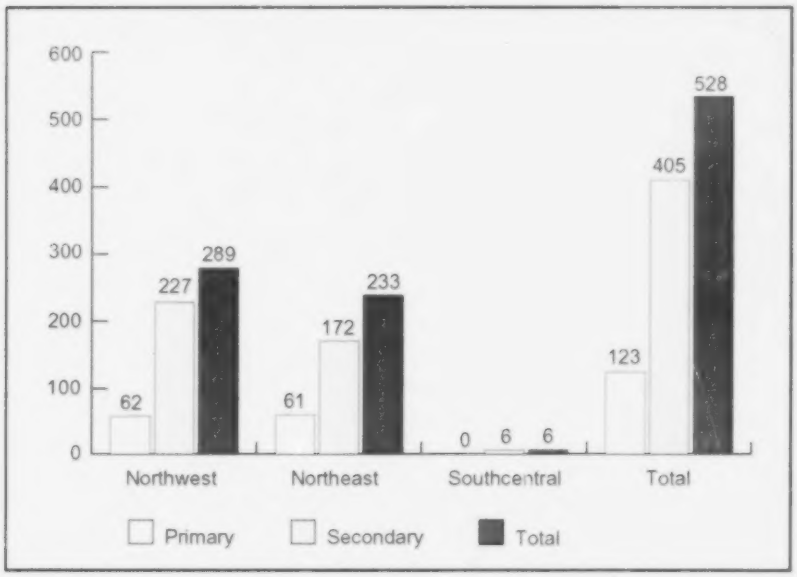
Primary Roads: Essentially permanent roads. They are regularly maintained with a life expectancy in excess of 15 years.

Secondary Roads: Essentially branches off primary roads. They are not considered permanent and are not normally maintained beyond their 5- to 15-year period of use.

Tertiary Roads: Built for short-term use (i.e. up to five years). They are not maintained beyond their period of use.

Figure 16

Road Construction (kilometres) in 1999/2000 by Road class and MNR Region



Road Abandonment and Access Control

Road abandonment and access control must be planned in advance of construction and documented in the forest management plan for each management unit. These activities must also be reported in the management unit annual report.

Figure 17

Road Maintenance (kilometres) in 1999/2000 by MNR Region

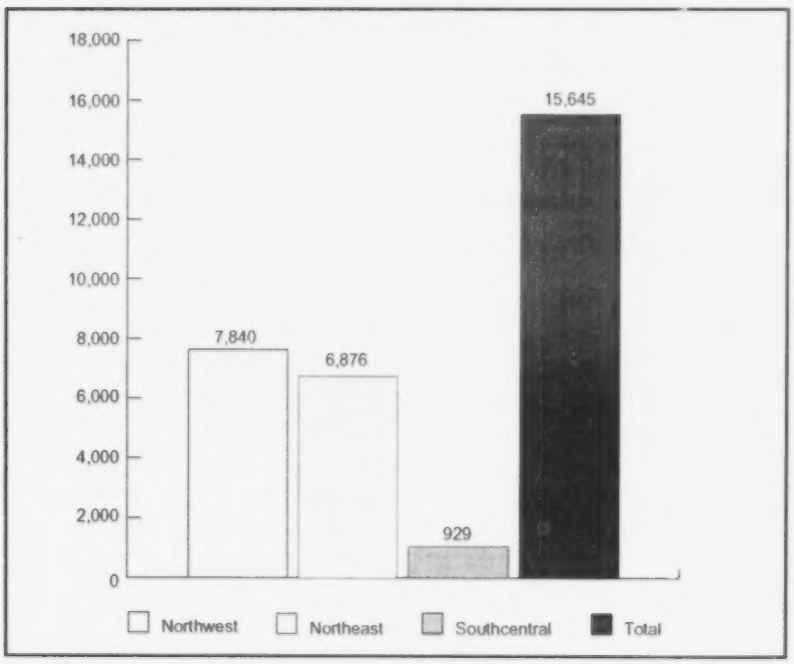


Figure 18 shows the total length of primary and secondary roads that were abandoned in each MNR region in 1999/00. In total, 302 kilometres of road were abandoned. This total was entirely in the Northwest Region. The majority of these roads were abandoned by natural means.

For reasons of public safety and/or resource management, access roads may be closed on a temporary, seasonal, or permanent basis. Methods used to control access can generally be classified into two categories: erecting signs to advise the public of the restriction (referred to as "signage"); or, erecting gates or using

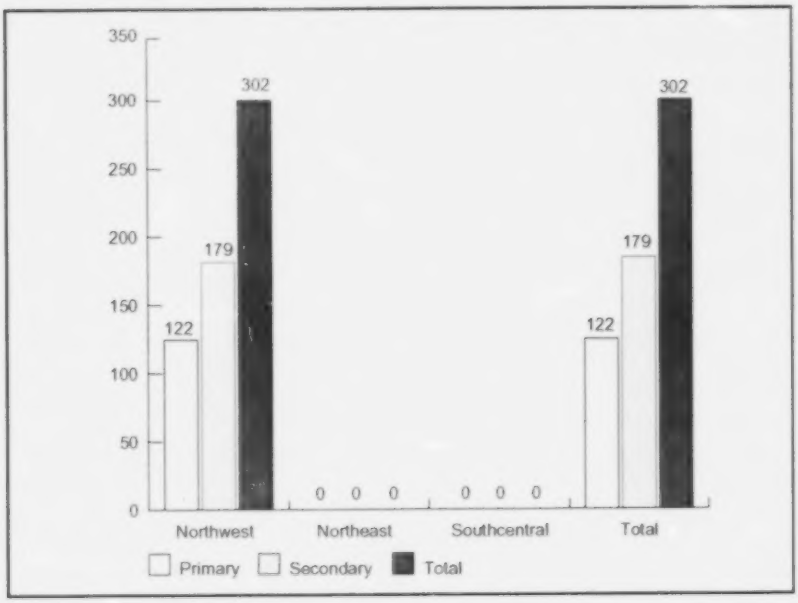


Figure 18

Road Abandonment (kilometres) in 1999/2000 by Road Class and MNR Region

other physical means such as ditching (referred to as "gated" or "physical barrier").

Figure 19 shows the length of primary and secondary roads that had controlled access during 1999/00 in each MNR region. A total of about 3,081 kilometres of road had access controls, consisting of 1,278 kilometres in the Northwest Region, 1,136 kilometres in the Northeast Region, and 667 kilometres in the Southcentral Region. Provincially, access was

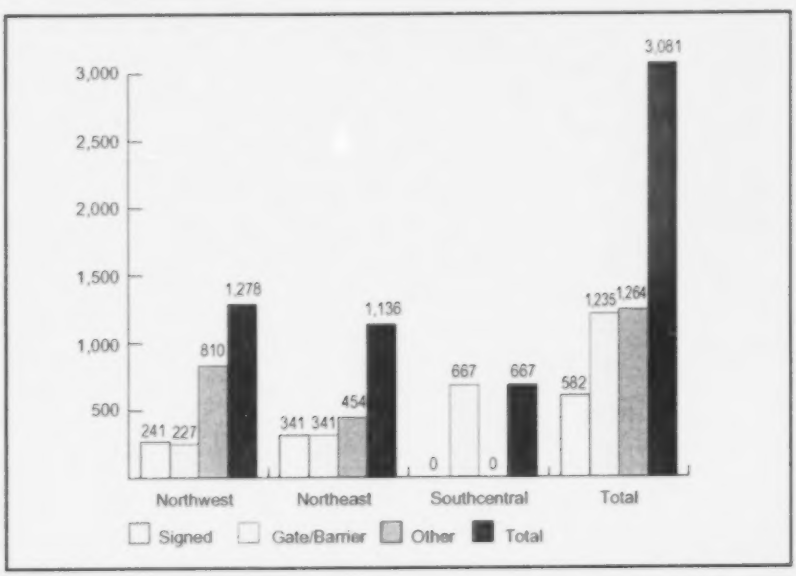


Figure 19

Road Access Control (kilometres) in 1999/2000 by Control Method and MNR Region

restricted on 1,235 kilometres of road by gating and on 582 kilometres of road by signage. Another 1,264 kilometres of road had access control through unspecified means and are shown in the "Other" category in Figure 19.

Access Control: The closure of a road to public travel or the restricted access to a road for certain specified uses for given periods of time.

Road Abandonment: The use management strategy adopted when a road has fulfilled its original use and is no longer required, or when maintenance cannot be justified.

Natural Abandonment: The natural degradation of a road when it is not maintained. Road maintenance has ceased and steps are not taken to prevent the use of the road by vehicular traffic through means of physical disablement.

Physical Abandonment: A deliberate act to render a road unusable by vehicular traffic. For example: gating, ditching, bridge or culvert removal, etc.

Chapter 8

Monitoring and Compliance

Forest operations in Ontario are monitored and audited to assess compliance and evaluate progress and results. There are three types of monitoring: effectiveness, effects, and compliance. The information collected and analyzed for effectiveness monitoring determines how well the forest is growing. Effects monitoring assesses the impacts of operations on various aspects of the forest ecosystem through long term studies. Compliance monitoring is conducted to ensure that MNR and the forest industry carry out operations according to plans, regulations, and the required standards. Operations are also audited through Independent Forest Audits, providing independent published audits of management units across the province.

Forest Auditing

Independent Forest Audits are a requirement of the CFSA, Term and Condition #86 (T & C #86) of the Timber Class EA decision, and are a condition of SFLs. All management units, both Crown and SFL, are audited at least once every five years to review actual operations and examine the forest management activities carried out over the previous five years.

The audit is a systematic and documented verification process to assess adherence to the forest management plan and the planning process. Assessing the interpretation and application of provincial policies, manuals, and guidelines at the management unit level is also part of the audit. Auditors examine the effectiveness in achieving the planned objectives and provide an assessment of forest sustainability for the management unit. Audit teams review licensee compliance with the obligations of their specific SFL.

In order to address the audit purpose and objectives, the audit process and protocol document sets out the forest management principles, criteria, and procedures for undertaking Independent Forest Audits. The audit protocol identifies eight guiding principles, identified by the following titles: commitment, public participation, forest management planning, plan

implementation, systems support, monitoring, achievement of management objectives and forest sustainability, and contractual compliance. For each principle, a series of specific criteria are identified that, when met, will result in achievement of the principle.

The audit terms of reference are the same for all Independent Forest Audits, including the audit team personnel requirements. Each audit team consists of a lead auditor who is trained in auditing procedures and has current auditing experience, a minimum of two foresters with experience in forest management planning and forest operations, and an individual trained in forest ecology or wildlife management. All members of an audit team must have a minimum of seven years recent and relevant experience in similar forest types, must be independent of the operations they audit, as well as be free from conflict of interest throughout the process. The audit team must include a Registered Professional Forester. Beginning in 1999, audit teams were also required to have a minimum of one person with experience in: socio-economics and the impacts of forest management planning on socio-economics; public consultation relating to forest management planning; and, First Nations involvement in forest management planning. For the 1999 audits, the audit team was required to provide an audit against the requirements that were in effect during the audit period and prepare the subsequent report for publication.

Action plans must be developed in response to each audit report. The licensee and the MNR district responsible for the management unit jointly develop the action plan. For each recommendation in the audit report, the action plan must state the required action, the organization and individual responsible for the work, deadline dates, and a method of tracking the progress of the action plan. A status report for the action plan is also required two years after acceptance of the audit report to ensure that progress is occurring as specified in the action plan. The Independent Forest Audit reports are published and are available upon request.

Summary of the 1999 Independent Forest Audits

In 1999, Independent Forest Audits were conducted on 14 management units, namely the Big Pic, Caribou, Dryden, Flanders, Fort Frances, J.E. Martel, Lakehead, Trout Lake, and Whiskey Jack Forests; and the Elk Lake, Lanark, Mazinaw, Timiskaming, and Watabeag Management Units. These were reported in eleven audit reports (Flanders Forest and Fort Frances Forest were audited and reported together, as were the Elk Lake,

Timiskaming, and Watabeag Management Units). Nine of the 11 audit reports for 1999 concluded that the forest under audit was being managed sustainably. The auditors could not assess sustainability in two audit reports due to inadequate information. Eight of the audit reports concluded that management had been performed in general compliance with legislation and policy in force during the period under audit.

Regarding licence extension, six audits indicated that the SFL holder had met their obligations and recommended extension. Two audit reports, which involved licences which had only been in place for one year, indicated that the licensee had met their obligations and audit requirements during that year. In two audits, the auditor concluded, "If the Company and MNR comply with all of the recommendations of this audit report that management of the Forest will meet the requirements of the CFSA, its implementation manuals, the SFL agreement and the audit protocol". These two audit reports covered units in which management went through a transition from the Crown to an SFL holder during the audit period.

Big Pic Forest

The Big Pic Forest is managed by Fort James – Marathon Ltd. through contractual arrangements with Buchanan Forest Products Ltd. The audit report indicated that management of the Forest is being conducted to a high standard. The auditor further indicated that management was in compliance with the forest management plans, guidelines, and legislation in force during the five-year period ending March 31, 1999, and that proactive steps had been taken to move beyond the requirements for the benefit of the Forest. The audit report identified 11 recommendations. The auditor identified a number of items requiring improvement relative to the management of the unit. The auditor indicated that MNR and the LCC should examine ways to encourage native participation on the LCC. Knowledge retention, and information and document management were common areas needing improvement in this Forest. Both the company and the MNR should monitor and take appropriate remedial action to prevent erosion of roads and the risks associated with potential environmental damage and public safety. The auditor also recommended that the MNR either regulate the Forest Information Manual or note that compliance with a draft manual is a best practice not a requirement. Licence renewal was recommended.

Caribou Forest

The Caribou Forest is managed by Bowater Pulp and Paper Canada Inc. The audit report indicated that the Forest has been significantly underutilized for

the five-year period ending March 31, 1999. Where operations have occurred, they have been carried out efficiently and effectively and the new forest is growing well. The audit report identified 18 recommendations. The auditor identified a number of items requiring improvement relative to the management of the unit. The Company should increase its commitment to the management of this Forest. Relationships between MNR and the Company have been strained and require significant efforts to improve them. Information provided to the LCC and the planning team must be complete and timely to enable a proper review of the material. Information management and reporting is an area needing improvement on this Forest, particularly in relation to timely and accurate annual and five-year reports, and complete forest management plan tables. Monitoring efforts must be improved in relation to silvicultural effectiveness surveys and the Company compliance plan must be fully implemented. Utilization should be significantly increased on this Forest to meet the planned harvest levels. The Company is also directed to maintain the required minimum balance in their Forest Renewal Trust fund account. The auditors concluded that if the MNR and the Company comply with all of the recommendations in the audit, management of the Forest will meet the requirements of the CFSA, its implementation manuals, the SFL agreement, and the audit protocol.

Dryden Forest

The Dryden Forest is managed by Dryden Forest Management Company and previously by MNR. The audit report indicated that the Forest has been managed in a sustainable fashion for the five-year period ending March 31, 1999. The auditors noted that they were impressed with the condition and quality of the Forest and noted that forest renewal activities are of superb quality and quickly follow the harvest. The audit report identified 16 recommendations. The auditor identified a number of items requiring improvement relative to the management of the unit. Better data collection and monitoring to support forest management were needed in relation to silvicultural effectiveness, fish and wildlife values, cultural heritage values, and forest compliance. Self-compliance training was also recommended for operators. Site protection was identified as an area needing attention in relation to slash and chipper debris piles and site damage related to the use of grapple skidders. The auditors concluded that if the MNR and the Company comply with all of the recommendations in the audit, management of the Forest will meet the requirements of the CFSA, its implementation manuals, the SFL agreement, and the audit protocol.

Fort Frances and Flanders Forests

The Fort Frances and Flanders Forests are managed by Abitibi-Consolidated Inc. and previously by MNR. The audit report indicated that the Forests were managed effectively and were in compliance, in all material respects, with the legislative and forest management requirements during the five-year period ending March 31, 1999. The audit report identified nine recommendations and two best practices. The auditor identified a number of items requiring improvement relative to the management of the Unit. Collection of more non-timber values information is needed to enable more precise prescriptions for areas of concern (AOCs). Utilization of cedar and birch should be improved on this Forest. More effort is needed to ensure the removal of garbage related to forest management activities, and abandoned work sites need to be rehabilitated. Document management needs to be improved by the MNR so that information is not lost or misplaced. The Company has undertaken an aggressive program to survey potential FTG sites, tend backlog renewal areas and return them to productive forest stands. The auditor recommended that the Company continue to manage those areas not yet returned to FTG as per the terms of their licence obligations. One example of a best practice noted by the auditor is the use of temporary bridges that can be installed and subsequently removed with minimal detrimental environmental effects. Licence renewal was recommended.

J.E. Martel Forest

The J.E. Martel Forest is managed by Domtar Inc. The audit report indicated that management of the Forest has been consistent with the general principles of sustainable forest management during the five-year period ending March 31, 1999 and the audit team was generally favourably impressed with the management of the Forest during the period under review. They found that the quality of forest management improved during the audit period and believe that the continued incorporation of the Company into the broader Domtar Inc. corporate entity will lead to an even higher standard of forest management. The audit report identified 16 recommendations. The auditor identified a number of items requiring improvement relative to the management of the unit. In general, the Ministry underwent reorganizations that saw its manpower, budget, and responsibilities in forest management decrease. The auditor was concerned that the role of the local Ministry office in the management of the Martel Forest has become too marginal. The MNR needs to make efforts to improve public consultation, both by documenting work with the First

Nations and by working with the Local Citizens' Committee (LCC), to ensure that it is capable of fulfilling its mandate. The auditor recommended that the best available information be used in modeling future forest conditions because this has a direct affect on future harvest levels. Monitoring on the Forest needs to be improved in relation to industry self-compliance, silvicultural effectiveness, and silvicultural practices involving natural regeneration and sensitive sites. Licence renewal was recommended.

Lakehead Forest

The Lakehead Forest is managed by Greenmantle Forest Inc. and previously by MNR. The audit report indicated that management of the Forest conformed to the planning manual requirements during the five-year period ending March 31, 1999. They noted that the combination of knowledgeable MNR staff, experienced harvest operators, and the general small scale of forestry operations, amongst other factors, resulted in the sustainable management of the Lakehead Forest. The audit report identified 13 recommendations and four best practices. The auditor identified a number of items requiring improvement relative to the management of the unit. The auditor recommended that negotiations and communications with First Nations continue to ensure long-term First Nation economic opportunities from the Forest. The auditor indicated that the staffing levels, financial resources, and inventories of timber and non-timber values were substandard during the audit period. Actions, such as the completion of a new FRI, are being taken to rectify this situation. The auditor indicated that training and succession plans should be developed to address staffing issues. The long term road maintenance responsibilities between the MNR and the Company also needs to be clarified. One example of a best practice that the auditor noted on this Forest is the excellent job that MNR did in trying to involve the public in the planning process. The auditor concluded that the SFL holder had met their obligations within their short period of operation (one year). Licence renewal was recommended provided the licensee addresses the recommendations of the audit report.

Elk Lake, Timiskaming, Watabeag, and the former W. L. Plonski Management Units (now the Timiskaming Forest)

The Timiskaming Forest was managed by MNR for the first four years and by the Timiskaming Forest Alliance Inc. for the last year of the five-year period ending March 31, 1999. The audit report concluded that forest management did not conform to existing program direction and legislation during the five-year audit period. It further concluded that an assessment

of sustainability could not be made due to the lack of relevant and credible information. The audit report identified 16 recommendations. The auditor identified a number of items requiring improvement relative to the management of the unit. These include the poor condition of the inventory, approximately 15 percent of the land base classified as barren and scattered, inconsistent silviculture prescriptions and results, and forest management planning documentation requirements not being fully met. The auditor indicated that an assessment of sustainability could not be made for several reasons. The annual reports were found to be inconsistent with the Reports of Past Forest Operations (RPFOs). MNR reconciled the reports after the closing meeting of the audit, but the auditor questioned the decisions made based on those inaccurate RPFOs. The report produced by the forest manager for the audit did not provide sufficient additional information to confirm the achievement of management objectives in the short or long term. The auditor concluded that the SFL holder had met their obligations within their short period of operation (one year).

Trout Lake Forest

The Trout Lake Forest is managed by Weyerhaeuser Canada Inc. The audit report indicated that the Forest was managed on an effective basis and was in compliance, in all material respects, with the legislative and forest management requirements during the five-year period ending March 31, 1999. The audit report identified 13 recommendations and nine best practices. The auditor identified a number of items requiring improvement relative to the management of the unit. The Company and MNR should closely monitor the activities of new contractors and overlapping licensees to ensure compliance and hold them to the same high compliance standard as others. The auditor made several recommendations related to landscape level planning, including the need to examine options that consider and integrate social and economic factors. The need to develop a monitoring program to assess the effectiveness of the *Caribou Management Guidelines* was identified as a related issue. The auditor also recommended that the company develop and track regular safety and environmental training programs for staff, overlapping licensees, and contractors. One example of a best practice noted by the auditor is the effort by the company and MNR to integrate the new guidelines related to cavity tree retention into the operations of an existing timber management plan. They also subsequently established a monitoring program to determine the most effective distribution of residual cavity trees in cutovers. Licence renewal was recommended.

Whiskey Jack Forest

The Whiskey Jack Forest is managed by Abitibi-Consolidated Inc. The audit report indicated that the Forest was managed on an effective basis and was in compliance, in all material respects, with the legislative and forest management requirements during the five-year period ending March 31, 1999. The audit report identified 12 recommendations and eight best practices. The auditor identified a number of items requiring improvement relative to the management of the unit. The Company needs to improve its working relationships with both MNR and First Nations. Efforts to involve First Nations on the LCC and in economic opportunities on the Forest need to continue and be intensified. Data collection, record keeping, and reporting need to be improved on this Forest. Prior to the use of aerial herbicide treatments, the Company needs to ensure that all candidate blocks have received a thorough field assessment. One example of a best practice noted by the auditor is the extremely good construction of, and innovative approaches taken to, water crossings on this Forest. Licence renewal was recommended.

Lanark Management Unit

The Lanark Management Unit is managed by MNR. The audit report indicated that the unit was well managed by Ministry staff during the five-year period ending March 31, 1999. The auditor concluded that the forest management activities on the Unit conformed to existing program direction and legislation during the audit period, and that the Unit is being sustainably managed. The audit report identified eight recommendations and four best practices. The auditor identified several items requiring improvement relative to the management of the Unit. The auditor emphasized that the MNR should employ a system of progressive discipline to discourage non-compliances in harvest operations, and that any necessary follow-up inspections need to be conducted and documented. An assessment of 1988-98 renewal activities is to be completed. One example of a best practice noted by the auditor is the prompt response MNR developed to deal with the damage caused by the ice storm that occurred in January 1998.

Mazinaw Management Unit

The Mazinaw Management Unit is managed by MNR. The audit report indicated that management conformed to existing program direction and legislation during the five-year period ending March 31, 1999, apart from some notable exceptions. The audit team confirmed that there is a productive forest growing on the Unit, which is under satisfactory short-term

management. The audit report identified 17 recommendations and two best practices. The auditor identified a number of items requiring improvement relative to the management of the Unit. Several improvements to information and information-gathering are recommended by the auditor: fisheries inventory data needs to be improved; forest management activity around raptor and heron nests should be recorded; silvicultural treatment packages need to be developed, recorded, and tracked as full silvicultural strategies; harvest blocks need to be traceable through the entire planning and operating cycles; required stand listings should appear in key documents; and, assessment of renewal success is to be completed within one year. Due to inadequate information, the achievement of forest management plan objectives could not be measured, nor could the audit team assess the forest's sustainability. Improved follow-up on operational non-compliance is needed. One example of a best practice noted by the auditor is the thorough approach taken to integrated resource management on the Unit.

The following Independent Forest Audits of SFLs are planned for 2000: Brightsand, Dog River-Matawin, English River, Gordon Cosens, Kenogami, Iroquois Falls, Lower Spanish, Upper Spanish, Nakina North, Ogoki, Red Lake, Smooth Rock Falls, and Wabigoon Forests. In addition, there will be four audits of Crown and former Crown management units: Cochrane, Kapuskasing, Moose River, and Spanish River Management Units. Finally, there will be one audit of a former Company management unit, Iroquois Falls South. The results of these audits will be published upon completion.

Compliance Monitoring

The forest operations compliance monitoring system in Ontario is designed to ensure that both the MNR and forest industry carry out forest operations according to approved plans and operational standards, and in compliance with legislation. At the management unit level, compliance inspection reports are prepared for harvest, access, renewal, maintenance, and protection operations. These reports assist managers to focus on any activities that may require immediate attention, provide a database for identifying provincial trends, and provide feedback for compliance program adjustment.

Prior to 1998/99, MNR was solely responsible for forest operations compliance throughout Ontario. Effective April 1, 1998, all existing SFL holders assumed lead responsibility for conducting a comprehensive program of forest operations compliance as a condition of their licence. The

program includes planning, monitoring, inspection, reporting, training, and education. At this time, the MNR role changed from full inspection to one of monitoring/auditing, conducting "spot-checks" of industry activity, investigation, and enforcement. On the few management units (Crown units) where MNR still conducts forest operations, the MNR remains directly responsible for delivering the compliance program.

The 1999/00 annual report is the second to report the results of "industry self-monitoring and reporting" across the province derived from information largely from a standard electronic format for inspection reporting. Effective April 1, 1998, it became mandatory for all MNR staff to use the Forest Operations Compliance Information System (FOCIS) to complete inspections of Crown units and any "spot-checks" or audits of SFLs, and to submit all inspections to the provincial database, the Compliance Information System (CIS).

Interpreting the data collected through FOCIS and CIS requires experience and understanding of the systems and the 'new' roles and responsibilities under the MNR and forest industry partnership. It is expected that several years of electronic data collection is required before statistically confident and consistent information can be reported and analyzed. Reports from 66 forest management units are included in the 1999/00 annual report.

The forest industry (SFL holders) is required to report all incidents of non-compliance on their management unit to the MNR. This includes infractions incurred by the SFL, overlapping licensees, and any private individual who contravenes the CFSA. However, the SFL does not have responsibility for assessing the degree of significance of a non-compliance. This is strictly an MNR responsibility.

Ministry of Natural Resources is the regulatory agency with respect to forest operations compliance; MNR "verifies" all instances of non-compliance as reported by companies. Therefore, for each report of non-compliance by industry, there will also be at least one MNR inspection report. For those incidents that are moderate or significant, MNR will actively monitor the non-compliance until it is resolved. This action may result in additional reports of non-compliance by MNR. Also, MNR undertakes random as well as planned "spot-checks and audits" of forest operations. This may result in additional reports of non-compliance which may not have been reported by a company due to a difference in interpretation between the industry inspector and the MNR inspector.

Furthermore, in some cases, especially those of a minor nature, industry may remedy the situation and deem the infraction too minor to report. In summary, fundamental differences between the MNR audit and verification role and that of the industry inspection role will lead to differences in the non-compliance reported by MNR and industry, with the total of MNR non-compliant reports generally tending to be greater. On-going training of all field inspectors will narrow the gap. Results of both industry and MNR compliance inspections are summarized in Table 11. Table 11 also has an extra row added at the bottom that lists the 1998/99 report summaries for comparison purposes.

Table 11

Forest Operations Compliance Inspection Reports Summary for 1999/2000 and 1998/99

	Industry			MNR					
Operation Type	Total # Reports	Total # Compliant Reports	Total # Non-Compliant Reports	Total Audits, Checks, Verifications	Total # Compliant Reports	Total # Non-Compliant Reports	Significance of Non-Compliant Reports		
							Minor	Mod	Significant
Access	917	868	49	482	343	139	90	34	15
Harvest	2,822	2,581	241	1,477	1,128	349	242	75	32
Renewal	520	511	9	114	91	23	19	3	1
Maintenance	278	276	2	33	30	3	3	0	0
Protection	1	1	0	0	0	0	0	0	0
99/00 Total Reports	4,538	4,237	301	2,106	1,592	514	354	112	48
98/99 Total Reports	**2,932**	**2,797**	**135**	**2,184**	**1,699**	**485**	**344**	**104**	**37**

Notes: The data for each operation type should not be examined in isolation due to the interrelated nature of activities. An inspection is comprehensive in terms of its ability to examine all related activities or sub-activities within the operation.

Joint Inspections/Exchange

Of the total 6,644 inspection reports undertaken across the province, 990 were conducted jointly between MNR and company staff. This activity is encouraged in the first year or two to establish consistency in observations and reporting where new SFLs have been created or where interpretation issues require resolution. It is a requirement that all "in-compliance" inspection reports be exchanged within five working days of completion of the inspection report. In cases of non-compliance, industry must report these situations within five working days or within 24 hours of the discovery of the

violation, if the violation is potentially significant. Similarly, MNR must advise the SFL within the same time periods of any violations it detects.

Road Washouts

Appendix 20 of the Timber Class EA decision requires MNR to report annually on road washouts. Compliance inspections of road water crossings conducted throughout 1999/00 indicate that 19 washouts were reported by forest companies and 29 were identified by the MNR, for a combined total of 48. Washouts can occur due to a number of factors, including natural causes such as flooding and blockage due to beaver activity, and poor road construction techniques.

Actions Taken

In the new compliance partnership model, industry must report non-compliance situations and MNR verifies, assesses the significance, and determines the appropriate remedy and enforcement action if any is required.

In many instances of minor non-compliance, immediate remedial action is undertaken and enforcement measures are not warranted. While the CFSA remedy and enforcement provisions apply largely to licensees of the Crown, any person who contravenes the CFSA may be charged. A total of 26 offence charges were laid under the CFSA to individuals who were unlawfully harvesting forest resources in a Crown forest (see Table 12).

Table 12

Remedy and Enforcement Action Taken (1999/2000)

Method	Count	Fine
Admninistrative Penalty	53	$207,909.18 (to Forest Futures Trust)
Offence Charge	26	$26,110.00 (to general revenue)
Stop Work Order	5	n/a
Repair Order	16	n/a
Compliance Order	18	n/a
Warnings	27	n/a
Investigations (no charges warranted)	2 (3 ongoing)	n/a
Total	**147**	**$234,019.18**

Although all incidents of non-compliance are reported in the fiscal year in which they occurred, a number of cases are ongoing (under investigation

or subject to court action) in terms of remedy and enforcement action, and they will be recorded when resolved.

Effectiveness Monitoring

Harvest and renewal activities are reported annually at the time they are implemented. Determination of the success of these activities in regenerating the forest is carried out by specific assessment methods, which are conducted a number of years (usually 5 to 15 years) after regeneration treatments are completed. Free-To-Grow assessments are an effectiveness monitoring tool that provides an indication of the success of the silviculture treatments and information to project the future forest condition. These assessments involve a variety of techniques including field measurement of trees on sample areas of the forest, aerial surveys, and remote sensing. Some forest managers conduct these surveys annually while others prefer to accumulate larger blocks that they assess once every few years. This has resulted in a backlog of areas needing assessment. The Forest Renewal Trust fund now provides funding for these surveys on SFL areas and many forest companies are now assessing their regularly scheduled regeneration as well as the backlog areas.

Figure 20 summarizes the areas assessed and those that were declared FTG for 1999/00 by region for the 40 management units that reported. Of the total area assessed for FTG, 88 percent was approved as having

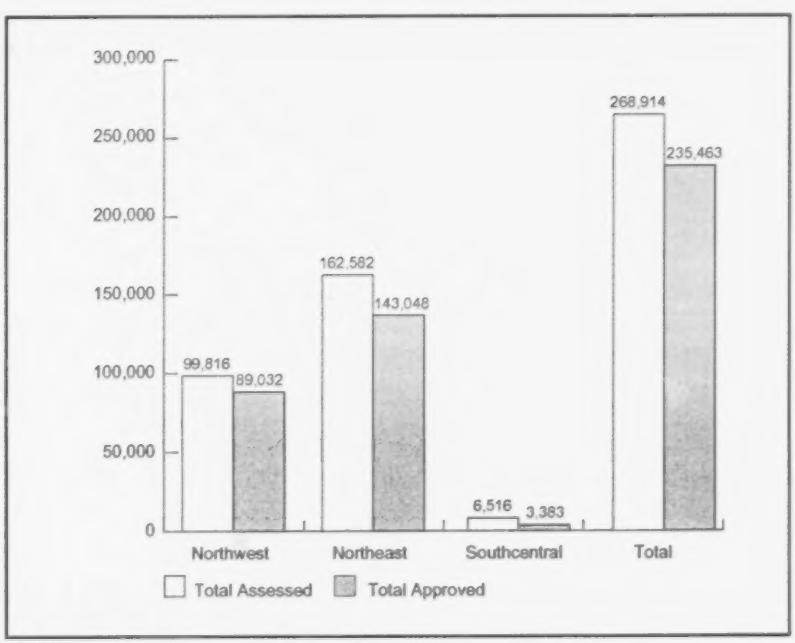


Figure 20

Summary of Area (hectares) Declared Free-To-Grow by MNR Region (1999/2000)

achieved the FTG standard within a set time period. This varies by region, from 89 percent in the Northwest Region and 88 percent in the Northeast Region to 52 percent in the Southcentral Region.

Some of the areas found not to be classified as FTG at this time will require re-treatment and others will require tending (i.e., to suppress undesirable competing vegetation such as brush and grass). Other areas will simply require the passage of more time to allow for the incremental growth necessary to meet the height standard for FTG. All harvested areas are required to be renewed successfully.

Effects Monitoring

Effects monitoring is a long term assessment of potential forest management impacts on the forest ecosystem. The summary of research activities and scientific studies for 1999/00 pertaining to forest operations and practices is presented in Chapter 10. As part of MNR's adaptive management practices, the results are used to update existing guidelines and policies and to prepare new ones.

Chapter 9

Implementation of Term and Condition #77

Term and Condition #77 of the Timber Class EA decision requires the MNR to negotiate with Aboriginal peoples at the local level regarding opportunities for more equal participation in the benefits of forest management. In referring to Aboriginal peoples, T & C #77 includes communities, individuals, enterprises, and organizations.

The wording of T & C #77 is as follows:

> *"During the term of this approval, MNR district managers shall conduct negotiations at the local level with Aboriginal peoples whose communities are situated in a management unit, in order to identify and implement ways of achieving a more equal participation by Aboriginal peoples in the benefits provided through timber management planning. These negotiations will include but are not limited to the following matters:*
>
> *a) Providing job opportunities and income associated with bush and mill operations in the vicinity of Aboriginal communities.*
>
> *b) Supplying wood to wood processing facilities such as sawmills in Aboriginal communities.*
>
> *c) Facilitation of Aboriginal third party licence negotiations with existing licensees where opportunities exist.*
>
> *d) Providing timber licences to Aboriginal people where unalienated Crown timber exists close to reserves.*
>
> *e) Development of programs to provide jobs, training and income for Aboriginal people in timber management operations through joint projects with the Department of Indian and Northern Affairs.*
>
> *f) Other forest resources that may be affected by timber management or which can be addressed in the timber management planning process as provided for in Condition 23(c)."*

Implementation

The scope of T & C #77 is broad, and its application and implementation are determined by variables at the local level. The arrangements and agreements that are effected by MNR district managers and Aboriginal communities take different forms, in an effort to accommodate to the extent possible the unique needs, capacities, and situations of individual Aboriginal communities in the context of available opportunities.

The implementation of T & C #77 may include the involvement of individual Aboriginal communities, or groups of communities, with common interests that are situated in a common geographic area. Linkages with Tribal Councils and regional organization representatives are taken into consideration and encouraged.

In its decision, the EA Board ordered MNR to build upon initiatives it was already pursuing and to provide new opportunities for Aboriginal peoples that will enable them to benefit from forest management activities in their local areas.

In January 1996, MNR released a draft version of the *Implementation Guidelines for Term and Condition #77 of the Class Environmental Assessment.* In response to criticisms and the need for further clarification MNR released further guidelines in 1999. The purpose of these guidelines is:

- to provide MNR district managers with a consistent framework for the implementation of T & C #77 that builds upon existing initiatives and facilitates the development of new initiatives
- to provide Aboriginal communities and forest industry companies with the information MNR district managers will use in the implementation of T & C #77

MNR implements T & C #77 consistent with the CFSA, which provides legislative authority to MNR for the sustainable management and use of forest resources. The CFSA has enabled MNR to put mechanisms in place that may assist in facilitating the implementation of T&C #77.

While responsibility for implementation of T & C #77 rests with MNR, the EA Board recognized that the involvement of other parties would be critical to successful implementation. Such involvement would include the participation of First Nations and other Aboriginal communities, the forest industry, and other government bodies (e.g., Ontario ministries, Department of Indian and Northern Affairs Canada, Natural Resources Canada).

Aboriginal participation in forest management and economic development activities is summarized under four categories: access to resources, role in planning and management, silvicultural opportunities, and training and development.

Access to Resources

First Nations are often in a position to operate as forest harvesters. Although Ontario's wood supply is almost completely allocated to SFL holders, MNR has helped the industry and the Aboriginal communities negotiate types of access. For example, overlapping licences have been issued to First Nations.

In other examples, First Nations have "first opportunity" to buy in as an independent operator when opportunities arise. The industry has been innovative and willing to consider a variety of means for First Nations to increase their access to forest resources.

Role in Planning and Management

Ontario has increased the role for First Nations through the CFSA. Districts have responded by seeking effective forums for Aboriginal communities to have a greater say in the planning and management of forest resources nearby. It is mandatory for forest management plans to include a detailed Native Background Information Report and Native Values maps. Districts have provided financial assistance to some communities to either prepare these components themselves, or to hire archeological research contractors.

In some districts, First Nations are represented directly with industry and government on the forest management planning team responsible for the planning decisions for each five-year plan.

Silvicultural Opportunities

Forest renewal offers a long list of operational requirements: growing trees, planting, tending, thinning, spraying, site preparation, and more. Many First Nations have experience in at least some silvicultural activities, and district managers have sought specific agreements between industry and First Nations to detail the type and scope of contract work that can be made available on a competitive basis. This work, taken together, can contribute to an effective economic development program.

Training and Employment

Although MNR is not the ministry with a training mandate, district managers have found ways to help coordinate existing federal and provincial programs to assist Aboriginal communities to prepare for increased participation in forest management activities.

On a more local level, districts have provided hands-on training for many years, through the Native Internship Program and Sault College's Aboriginal Resource Technician Program. The Aviation, Flood and Fire Management Branch of MNR has trained firefighters on several reserves, and prepared them for bidding on contracts.

In some districts, the forest industry provides the training strategy, recruitment and hiring support, and business opportunities for independent contractors. In some instances, MNR is taking the lead to assist in providing the building, equipment, and leadership to establish a training centre for Aboriginal peoples.

In all districts, there have been joint projects with First Nations for many years, with MNR providing the training, funding, facilities, and equipment.

District Progress

Ministry of Natural Resources is required to report on the progress of negotiations under T & C #77 for each district. Of the 26 MNR districts, five are outside the AOU, including Aylmer, Aurora, Cambridge, Midhurst, and Peterborough. A more detailed description of benefits provided to Aboriginal communities in each MNR district follows.

Algonquin Park

Management unit: Algonquin Park Forest

There are no First Nations or other Aboriginal communities situated within the Algonquin Park Forest. However, Algonquin Park is part of the traditional territory of several Algonquin communities surrounding the provincial park, including Bancroft, Mattawa-North Bay, Ottawa, Pikwakanagan (formerly Golden Lake), Sharbot Lake, and Whitney. Portions of the park are also included in the Robinson-Huron Treaty and Williams Treaty areas.

Advanced stage negotiations have been achieved with Algonquin communities regarding the 2000-2005 forest management plan. Several dozen

community meetings were held last year. The discussions, in part, involved issues regarding the completed Native Background Information Reports and matters related to the protection of native values.

Ontario and the federal government are engaged in land claim negotiations with the Algonquins of Ontario. Discussions continue with the Algonquins on forest-related economic opportunities as part of the ongoing land claim negotiations.

Several Algonquin community members are employed in sawmill and woodland operations that harvest timber from Algonquin Park. The Algonquin Forestry Authority has been and continues to enter into contractual arrangements for road maintenance and silviculture work with individual Algonquins and with community economic development corporations. Opportunities have been identified to supply tree seedlings from the Corry Lake Tree Nursery, an enterprise of Makwa Economic Development Corporation.

Through a signed Memorandum of Understanding, opportunities have been identified for upcoming contracts which include 300 hectares of pole work and stand improvements, road construction and maintenance, site preparation, tree marking, and data collection. In addition, forest resource allocations of 21,000 cubic metres annually have been identified for First Nation utilization over the next five years. This understanding will undoubtedly generate many new employment opportunities for the native community in upcoming years.

An increased Algonquin presence is also anticipated in future negotiations with the allocation of three seats on the Forest Management Planning Team, as well as the involvement of the Algonquins of Pikwakanagan and the Mattawa Algonquins in the preparation of future Native Background Information Reports for the Algonquin Park Forest.

Bancroft District

Management units: Bancroft, Minden, Mazinaw

There are no First Nation communities in the Bancroft District. However the Algonquin First Nation has satellite communities around the Bancroft, Sharbot Lake, and Whitney areas.

The district initiated discussions with several First Nation communities in an effort to identify potential employment and educational opportunities and to become involved in the forest management process. The

Algonquins of Whitney harvested timber on five FRLs with Murray Bros. Also, three stand improvement contracts and two tree marking and boundary line contracts totaling 596 hectares have been issued. In addition, the Golden Lake First Nation and the Algonquins of Sharbot Lake facilitated the preparation of local Native Background Information Reports.

The Algonquins of Whitney are members of independent licensees in the Bancroft-Minden SFL and have had a supply agreement to harvest 100 hectares per year that provides an estimated five full-time job opportunities. The total reported Aboriginal forest-related workforce in this district has been estimated at 14 individuals.

There is currently a First Nation representative on the LCC for the Mazinaw and Lanark Management Units. The Algonquins of Golden Lake submitted a proposal for training which is still in process and was supported by a local forest company.

Chapleau District

Management units: J. E. Martel Forest, Pineland Forest, Superior Forest, Upper Spanish Forest

The four First Nations in the Chapleau District are the Brunswick House First Nation, Chapleau Cree First Nation, Chapleau Ojibway First Nation, and the Missinabie Cree First Nation. As well, Michipicoten First Nation has two unoccupied land bases within the Superior Forest.

No allocations or forest resource licences were issued to First Nations within the district in 1999/00. Several First Nations were advised of a slash-pile burning contract, however no bid was made. A trucking company operated by a First Nation member has contracts with a local forest company's main log hauling contractor. In addition, conifer/oriented strand board logs were purchased from a First Nation within the district.

A general contracting company operated by Chapleau Cree First Nation members was under contract to supply gravel for road construction/maintenance, excavation work at the mill site, and winter sanding services to a local forest company.

A local forest company employs two First Nation members on a full-time basis in road construction and maintenance. It is estimated that seven community members are employed in the local sawmill and planer operations.

Missinabie Cree are involved in ongoing negotiations for a reserve in the Superior Forest. The SFL holder in the area has recognized the community's

historical interest in the area and has sponsored a documentary and agreed to discuss access to future economic development opportunities.

There is also a full-time Native Resource Technician employed within the district.

Cochrane District

Management units: Cochrane, Driftwood Forest, Iroquois Falls Forest, Moose River, Smooth Rock Falls Forest

The seven First Nations in the Cochrane District are Attawapiskat, Fort Albany, Fort Severn, Kashechewan, Moose Cree, New Post, and Weenusk. Only one, New Post, falls within the AOU. Moose Cree's traditional territory stretches south into the AOU. Wahgoshig First Nation also has overlapping traditional territory in the Cochrane District.

New Post First Nation was offered the opportunity to harvest 110,000 cubic metres of poplar over the five-year term spanning 1998 to 2003. Subsequent offers of 45,000 and 20,000 cubic metres of softwood were made to the New Post First Nation during 1999/00. An additional offer of 35,000 cubic metres has been made for the winter of 2000/01. These offers have not yet been acted upon at the time of this report.

New Post First Nation successfully harvested 22,000 cubic metres of wood from the Iroquois Falls Forest under a contract provided by Abitibi-Consolidated Inc. and the Company has extended an offer to New Post First Nation to harvest an additional 54,200 cubic metres in 2000/01. A pre-commercial thinning contract for 80 hectares was issued to the Wahgoshig First Nation, which provided temporary employment for nine persons.

Three members of the New Post First Nation were employed with two separate companies as field technicians in woodlands operations and another individual was hired to work in the mill in Cochrane. Summer employment opportunities were extended to five high school students and three individuals from New Post First Nation who were enrolled in the Aboriginal Resource Technician Program at Sault College. An individual from this program also works in a co-op program with Tembec Industries Inc., spending two days a week during the semester with Tembec staff. Several other employment offers were extended without success. Abitibi-Consolidated Inc. provided 12 potential tree-planting employment opportunities for individuals from New Post First Nation. Norboard Inc. has trained individuals in supervising harvesting operations as part of their ISO certification. In all, an estimated 33 Fist Nations people are directly employed in the forestry sector within the Cochrane District.

Negotiations are underway with three forestry companies, MNR, and the New Post, Moose Cree, and Wahgoshig First Nations regarding the signing of a co-operative SFL within the district. Ministry of Natural Resources, New Post First Nation, Wahgoshig First Nation, Tembec Industries Inc, and Abitibi-Consolidated Inc. have all signed documents relating to the pursuit of future forest management opportunities, initiatives, and partnerships.

Dryden District

Management units: Dryden Forest, English River Forest, Wabigoon Forest

The two First Nations located in Dryden District are Eagle Lake First Nation and Wabigoon Ojibway Nation. Other First Nation communities with interest or ongoing activities in the district include Grassy Narrows, Lac Seul, Saugeen, Wabaskang, and Whitefish Bay First Nations. Many of these were invited to participate in either the Native Consultation Program and the preparation of Native Background Information Reports or in the identification of local native forest values. Discussions with Aboriginal communities in the Dryden District are at an advanced stage. The local Ontario Metis Aboriginal Association has been included in the standard forest management planning consultation process following a meeting with the MNR in September of 1999.

Noopimiing Anokeewin Inc., a company affiliated with Wabigoon Ojibway Nation, has opted not to join the SFL for the Dryden Forest and, as a consequence, while retaining their guaranteed harvest level, no longer receives the silviculture opportunities provided to shareholders of the SFL company. In February of 2000, the Wabigoon Ojibway Nation was awarded a harvest opportunity, which covers approximately five percent of the planned annual harvest area of the Dryden Forest. Noopimiing Anokeewin Inc. harvested 60,029 cubic metres of wood on the Wabigoon Forest in 1999/00. Full-time employment was provided to an estimated 20 Aboriginal people. Concurrently, the total harvest by Noopimiing Anokeewin Inc. on the Dryden Forest was 12,364 cubic metres. The total annual harvest by Noopimiing Anokeewin Inc. increased from 54,702 cubic metres in 1998/99 to 72,393 in 1999/00 within the Dryden District. The Aboriginal peoples of the Wabigoon Ojibway Nation also harvested a total of 43,423 cubic metres of wood from the Dryden Forest.

Eagle Lake First Nation has also opted not to join the Dryden SFL but continues to have harvest rights on the Dryden Forest. In 1999/00, Eagle

Lake First Nation harvested 13,591 cubic metres of wood from the Dryden Forest and was also contracted for a total of 41,500 cubic metres of wood from the Wabigoon Forest, with an actual harvest of 10,147 cubic metres. This operation provided seasonal employment for 10 to 12 Aboriginal people for eight months. At the same time, Eagle Lake First Nation delivered an additional 1,694 cubic metres of wood from reserve land, giving a total harvest of 25,432 cubic metres for 1999/00, an increase of 17,074 cubic metres from the previous year.

Weyerhaeuser provided contract opportunities for pre-commercial thinning operations to Wabigoon, Eagle Lake, and Lac Seul First Nations, with Lac Seul accepting a contract to thin 46 hectares. Thirty-seven hectares were actually thinned, which provided seasonal employment for four people. In addition, Weyerhauser has discussed the possibility of purchasing seedlings in the future from a greenhouse that the Wabigoon Ojibway Nation community is building.

Both the MNR and the Dryden Forest Management Committee have sponsored students in the Aboriginal Resource Technician program at Sault College.

Fort Frances District

Management units: Flanders Forest, Fort Frances Forest, Highrock Forest, Sapawe Forest

The 11 First Nations located in the Fort Frances District are Big Grassy, Big Island, Couchiching, Lac La Croix, Naicatchewenin, Nicickousemenecaning, Onegaming, Rainy River, Seine River, Stanjikoming, and Whitefish Bay First Nations. Additionally, the Lac des Mille First Nation has expressed interest in being involved in the forest management process for the 2000 to 2020 term.

Discussions within the district are at an advanced stage. The MNR provided $15,000 worth of infrastructure funding for the Naicatchewenin Development Corporation, which is a First Nation forestry business actively involved with Abitibi-Consolidated Inc. During the past year, a Human Resource Committee and an Economic Development Committee were established in order to facilitate further negotiations between stakeholders.

Within the Fort Frances Forest and Flanders Forest management units, a total of seven separate harvesting licences were issued to six different First Nations, with a combined harvest allocation of 166,880 cubic metres. In addition, contracts were issued for hauling of 38,053 cubic

metres, site preparation of 58 hectares, planting a total of over 139,000 trees and pre-commercial thinning of 80 hectares. Employment was estimated for the Fort Frances and Flanders Forests at about 41 First Nation people.

Within the Highrock Forest, harvest allocations totaled 97,500 cubic metres of wood. Additional contracts for the Highrock Forest included three thinning contracts covering 306 hectares, a $250,000 road maintenance contract, and hauling contract for 30,000 cubic metres of wood. Employment was estimated for the Highrock Forest at between 75 and 85 First Nations people, plus an additional 80 to 90 First Nations mill workers.

Employment in the Sapawe Forest was approximated at an additional 25 First Nations people. In total, the employment numbers reported in the district this year have more than tripled over last year. As well, the total district-wide wood allocations this year surpassed those from last year by almost 80,000 cubic metres.

Three harvesting training opportunities were licenced to the Stanjikoming and Lac La Croix First Nations by Abitibi-Consolidated Inc., in an effort to develop the necessary skills to effectively carry out future contract prospects.

Three native persons sit on LCCs within the district.

Hearst District

Management units: Gordon Cosens Forest, Hearst Forest, Kapuskasing

Constance Lake is the only First Nation in the district, although, Hornepayne, Menominee, and New Post First Nations also have interests within the district. The Constance Lake First Nation (CLFN), has been issued an allocation of 29,000 cubic metres of wood on the Hearst Forest and 76,751 cubic metres on the Kapuskasing Management Unit. Mammamatawa Inc.,a First Nation harvesting company run and staffed by members of the CLFN, had additional contracts for roughly 64,000 cubic metres of wood in 1999/00. In addition, they were awarded a tree-planting contract, worth approximately $75,000. for half a million seedlings during the summer of 1999. Mammamatawa Inc.employs approximately 14 workers full- and part-time and the workforce at the local sawmill is comprised of almost 50 percent First Nations (approximately 65 individuals). This puts the number of Aboriginals working in the forest industry within the District at around 80 individuals. The SFL

holder and MNR jointly supported First Nation forestry summer students in the district, and First Nation graduates from the district are eligible for the Hearst Forest Management First Nations Scholarship.

Constance Lake First Nation has a representative on the Hearst LCC and a representative on the Hearst Forest forest management plan team.

Funding was provided to the Constance Lake and Hornepayne First Nations for a First Nation Values Research Technician and Native Values research on the Hearst Forest. Native Values documentation funding was also provided to New Post First Nation on the Gordon Cosens Forest.

Plans are underway for a collaborative effort to build a finger-jointing plant within the district.

Kemptville District

Management unit: Lanark

The Mohawk Council of Ahkwesahsne and the Algonquins of Ottawa and Sharbot Lake hold regular discussions on forest management opportunities. The amalgamated Mazinaw-Lanark SFL has been the primary liaison for negotiations and discussions. A member representing the Algonquin communities participates on the LCC. There was some assistance by Algonquins during road layout for one harvest location but there were no contracts, licences, or allocations designated in this district during 1999/00. The Algonquin communities prepared a Native Background Information Report as part of the forest management planning process and funding has been provided to the Ahkwesahsne to produce a manual on management of black ash.

In an effort to discuss forest management planning and native values within the district, a "Forestry Day" was held by the MNR, the SFL holder, and native community members.

Kenora District

Management units: Kenora, Whiskey Jack Forest

The 12 First Nation communities located in the Kenora District are Big Island, Dalles, Grassy Narrows, Northwest Angle #33, Northwest Angle #37, Ojibways of Onegaming, Shoal Lake #39 (Iskutewisakaygun), Shoal Lake #40, Wabaseemoong, Wabauskang, Washagamis Bay, and Whitefish Bay First Nations. Big Grassy First Nation is located in Fort Frances District but has an interest in resource planning in the Kenora District.

Ongoing discussions with Grassy Narrows First Nation were suspended by the First Nation following the approval of the Whiskey Jack Forest Management Plan and the subsequent denial by the Ministry of the Environment for an individual environmental assessment as requested by members of the First Nation. Discussions ceased for half of the year, resuming in September 1999.

The licence previously held by the Waubuskang First Nation was concluded and negotiations regarding the re-instatement of the licence had not yet reached a decision upon completion of the fiscal year. Hence, no overlapping license has been reissued.

Grassy Narrows First Nation, through an affiliate (K&Q Logging), was issued two overlapping one-year FRLs. The total volume of wood cut on these licences was 8,077 cubic metres.

Abitibi-Consolidated Inc. had offered the Grassy Narrows First Nation a joint venture opportunity to undertake a three-year, one million dollar pre-commercial thinning project. However, due to pending litigation, Grassy Narrows was obligated to decline. Abitibi Consolidated did provide $37,000 worth of training and culvert maintenance funding to the Grassy Narrows First Nation. Abitibi-Consolidated Inc. and MNR also supported student work/study placements within the district. Total MNR funding was valued at $14,800 for 1999/00.

Estimates of direct forest-related First Nation employment within the district totalled 9-16 individuals.

Kirkland Lake District

Management units: Iroquois Falls South, Timiskaming Forest (Elk Lake, Timiskaming, Watabeag)

The four First Nation communities with interests in the Kirkland Lake District are Wahgoshig, Beaverhouse, Temagami, and Matachewan First Nations.

Discussions between First Nations and industry, focused primarily on silvicultural opportunities leading to potential harvesting contracts, are at an early stage. However, the Wahgoshig First Nation and Tembec Industries Inc. have signed a Memorandum of Understanding with regard to establishing future business relationships.

The Matachewan First Nation was issued contracts to plant 247,243 trees at a cost of $31,400 and to carry out pre-commercial thinning on 150

hectares at a cost of $60,000. The Wahgoshig First Nation provided skidding support for a small forest operation and was also issued contracts to plant 200,540 trees at a cost of $25,496 and pre-commercially thin 100 hectares at a cost of $40,000. No data supporting total employment numbers from these contracts was available.

A Native Resource Technician was sponsored at Sault College and a summer experience program position was offered to a member of the Matchewan First Nation.

Total funding allocated through MNR and the Native Values collection opportunities for the four communities within the district was approximately $43,000.

Nipigon District

Management units: Auden Forest, Lake Nipigon Forest, Kenogami Forest, Nakina North Forest, Ogoki Forest, Pic River Ojibway Forest, Part of Lakehead Forest and Part of Black Sturgeon Forest

The fifteen first nations located in the Nipigon District are: Aroland, Eabametoong, Ginoogaming, Kasabonika Lake, Lake Nipigon Ojibway, Lansdowne House, Long Lake #58, Marten Falls, Nibinamik, Ojibways of the Pic River, Pays Plat, Red Rock, Rocky Bay, Sand Point, and Webequie.

Aroland First Nation is discussing potential business, employment, planning and licencing opportunities. The community is pursuing an overlapping Forest Resource Licence on the Nakina North Forest. The community has access to sivicultural contracts on two forests. It is estimated that thirty-five community members are employed in the forestry sector.

Eabametoong First Nation is discussing potential business, employment, planning and licencing opportunities. The community is pursuing an overlapping Forest Resource Licence on the Ogoki Forest.

Marten Falls First Nation is discussing potential business, employment, planning and licencing opportunities. The community is pursuing an overlapping Forest Resource Licence on the Ogoki Forest.

Rocky Bay First Nation (Biinjitiwaabik Zaaging Anishinaabek) has an overlapping Forest Resource Licence (FRL) for 51,000 cubic meters, and a second FRL for 9,000 cubic meters of wood. The community also had opportunities for sivicultural contracts in tree planting, manual tending & thinning operations, employing up to six band members through the summer and fall.

Red Rock First Nation has an overlapping Forest Resource Licence for 51,000 cubic meters of wood. The community also has opportunities for sivicultural contracts, with a value of $11,000.00. They are presently negotiating for additional licence volume of 7,880 cubic meters.

Ginoogaming First Nation have an estimated sixty members employed in the forest mill in Longlac. The community also has opportunities for sivicultural contracts.

Long Lake # 58 First Nation has opportunities for sivicultural contracts. An undetermined number of community members are employed in the woodland and mills.

Ojibways of the Pic River First Nation, through an affiliate Pic River Development Corporation (PRDC) has an overlapping Forest Resource Licence for 109,000 cubic meters. This overlapping licence is for a three-year term. They also had siviculture contracts for a tree plant for approximately $45,000.00. They provided trained Category 2 fire crews to MNR with successful results.

Lake Nipigon Ojibway First Nation participated on the 2001 Lake Nipigon Forest Management Planning Team via use of a consultant representing Red Rock First Nation, Biinjitiwaabik Zaaging Anishinaabek, and Lake Nipigon Ojibway First Nation, with members of the community as observers.

For the preparation of the Kenogami Forest Management Plan, the First Nations consultant participated as a member of the planning team on behalf of the following First Nations: Aroland, Constance Lake, Ginoogaming, Long Lake #58 and Pays Plat.

North Bay District

Management units: Nipissing Forest, Temagami

The three First Nation communities located within North Bay District are Temagami, Dokis, and Nipissing First Nations. A dozen meetings took place in 1999/00 and discussions regarding forestry opportunities are at an advanced stage.

The Temagami First Nation was allocated 22,208 cubic metres of wood or roughly two percent of the total available harvest area in the Temagami Management Unit. The allocation for the previous year was only 3,500 cubic metres by comparison. Temagami First Nation also completed 300 hectares of tending and pre-commercial thinning for an estimated

$216,000. This project directly employed ten First Nation persons. Funding was secured for a three–year, pre-commercial thinning project which was initiated in May of 1999 and is worth an estimated $720,000. Approximately ten aboriginal people were hired as a direct result.

The MNR provided $20,000 in funding for a liaison officer with the Temagami First Nation in order to facilitate the continuation of business opportunities with respect to the forest management planning process. Total funding rose from $166,000 in 1998/99 to $240,000 in 1999/00.

Three First Nation candidates in this district attended and completed an Aboriginal tree-marking course.

Parry Sound District

Management unit: French-Severn Forest (formerly Bracebridge and Georgian Bay)

The six First Nations located in the Parry Sound District are Henvey Inlet, Magnetawan, Moose Deer Point, Shawanaga, Wahta Mohawks, and Wasauksing. As well, Dokis First Nation is active in forest management in the district.

A forest technician was trained and hired from the Henvey Inlet First Nation with partial funding for the position provided by the SFL and the federal government. The Shawanaga First Nation also has a technician who is assisting the MNR with bear population surveys.

Limited crown resources, as well as ongoing land claims and full licence allocations, provide few Aboriginal opportunities within the district, although negotiations have been initiated to allocate a small surplus of timber. A portion of this allocation was successfully designated to the Dokis First Nation. In addition, a silvicultural contract was also awarded to the community, with total contracts valued at $50,000.

Henvey Inlet and Dokis First Nations have completed Native Background Information Reports and the Shawanaga and Magnetawan First Nations are in the process of completing these reports. In addition, the Dokis First Nation has a member on the forest management planning team, Shawanaga First Nation has representation on the LCC, and a member of the Wahta First Nation is a member of the local SFL planning team (Westwind Forest Stewardship Inc).

Pembroke District

Management unit: Ottawa Valley Forest (formerly Pembroke)

The district is in advanced stages of discussion with the Algonquins of Pikwakanagan (formerly Golden Lake), Algonquins of Greater Golden Lake and Area, and the Mattawa-North Bay Algonquins.

Local First Nation communities have been involved in the development of upcoming Native Background Information Reports, two of which have been fully completed including maps, value identification, and recognition of issues for further investigation.

The Algonquins of Pikwakanagan, through an affiliated company (Makwa Community Development Corporation Inc.), have maintained an overlapping FRL license and have been involved as an associate partner on the SFL since 1996. During 1999/00, this licence achieved a realized harvest of 20,167 cubic metres (an increase of 11,867 cubic metres from the previous year). Randy Commanda Forestry Services, Reserve Forestry and Guiding, and Kakina Forestry and Consulting Services are the primary Aboriginal businesses that are involved with the forestry operations on the SFL. Makwa Community Development Corporation (MCDC) administers timber allocations and the Corry Lake Tree Nursery, which employs five permanent Aboriginal staff and provides several seasonal positions. Randy Commanda Forestry Services harvested 136 hectares during 1999/00 for the overlapping FRL. This included all related stand improvements and road construction, and employed seven First Nation people. Randy Commanda Forestry Services also harvested an additional 52 hectares, which directly employed six individuals. It is estimated that 30 Aboriginal people were directly employed in the forest sector last year within the Pembroke District.

Ottawa Valley Forest Inc., which represents 12 member companies, has been in advanced discussions with Aboriginal communities and has identified potential opportunities including silvicultural contracts for harvest prescriptions, layout, tree marking, stand improvement, tending, pruning, data collection, and the production of nursery stock.

Ottawa Valley Forest Inc. has conducted fire training for six Aboriginal forest workers and staff members have participated in the delivery of tree marking courses for Aboriginal people both on-site and across Ontario. They have also endorsed Aboriginal requests for funds to conduct education/training development.

Kakina Forestry and Consulting Services was hired by the SFL to cruise 700 hectares of potential harvest area for the 2001-2006 forest management plan, and performed forest compliance activities on MCDC harvest operations. In addition, they conducted a total of 47 hectares of manual cleaning and a total of 625 hectares of tree marking.

Contracts have also been issued for, or completed for, the production of nursery stock, between Ottawa Valley Forest Inc. and the Corry Lake Facility operated by the MCDC, as well as 40 hectares of pruning and 500 hectares of tree marking by Randy Commanda Forestry Services.

In addition, representation by both industry and First Nations at meetings and workshops was exemplary.

Red Lake District

Management units: Red Lake Forest, Trout Lake Forest

There are seven First Nations communities located within the Red Lake District, including Deer Lake, Kee Way Win, MacDowell Lake, North Spirit Lake, Pikangikum, Poplar Hill, and Sandy Lake. Cat Lake, Wabaskang, Slate Falls, Grassy Narrows, and Lac Seul First Nations also carry out operations within their traditional use areas in the district. Maamawai, a group of Aboriginal people living off-reserve in the community of Red Lake, are involved in active discussions about economic development opportunities in the forest sector. All seven communities are remote, with winter access only, and are not located within designated district forest management units.

The Pikangikum First Nation has met regularly with the MNR and the local forest companies to discuss employment opportunities in the forest sector. Discussions are ongoing, regarding ventures for this First Nation, under the Northern Boreal Initiative. Discussions are also active between Lac Seul First Nation and local forest companies.

A local forest company met with Cat Lake First Nation to discuss long-term economic development opportunities. There were no allocations issued within the district. However some contracts for cone-picking and removal of nuisance beavers were issued. An estimated 46 Aboriginal people work in saw mills and bush operations in the Red Lake District.

Sault Ste. Marie District

Management units: Algoma Forest, Mississagi

The five First Nations within the Sault Ste. Marie District are the Garden River, Mississauga, Ojibways of Batchewana, Serpent River, and Thessalon First Nations. The North Shore Tribal Council is also active within the District.

There were no licences or allocations provided to First Nations during 1999/00 within the Algoma Forest. An allocation of 2,000 cubic metres of wood has been earmarked for the Garden River First Nation in the future. This community was issued a planting contract for 30,000 trees with training in management and supervision also provided.

Within the Mississagi Management Unit, six FRLs totaling 1,878 hectares were issued. Five were issued to the Robinson-Huron Forestry Co. and one was issued to another First Nations individual. Wood allocations totaled 23,610 cubic metres. Contracts were also issued to: the North Shore Tribal Council for the collection of 267 hectalitres of cones; to M'TIWA-Ki Services for two regeneration assessments totaling 2,400 hectares; and to the Mississauga First Nation for 50 hectares of manual cleaning. In addition, a 50 hectare area was provided for tree marking certification and the North Shore Tribal Council was contracted by MNR to digitize cultural heritage values on the Northshore Forest (created through the amalgamation of the Spanish and Mississagi Management Units on April 1, 2000). Contracts from industry were valued at $58,007, with an additional $11,805 in funding from the MNR.

Four First Nations individuals completed a tree-marking course funded by MNR. Six individuals participated in a Forest Ecosystem Classification workshop and three other individuals were involved in forest related training activities.

It is estimated that 80 First Nation people are employed in the forestry sector within the district.

Sioux Lookout District

Management units: Caribou Forest, Lac Seul Forest, Sioux Lookout Forest

There are 14 First Nations communities located in the Sioux Lookout District, of which only three (Lac Seul, New Slate Falls, and the Ojibway Nation of Saugeen) are located within the AOU of the Timber EA decision.

Mishkeegogamang (Osnaburgh) and Cat Lake have some of their traditional lands located within these forest management units.

Negotiations are underway within the district regarding road construction, harvesting, and upcoming forest operations.

Lac Seul First Nation has 150,000 cubic metres of available wood supply that has not been pursued due to access concerns. The Saugeen First Nation was allocated 65,700 cubic metres of wood, which subsequently was not harvested due to technical and operational issues. It is estimated that 62 Aboriginal people are employed in a local sawmill, woodland operations, and ferry services.

Bowater Pulp and Paper Canada Inc. is establishing a First Nations Ontario Ranger Program (similar to MNR's Ontario Ranger Program) and was recognized for their role in the development of the "Employers Toolkit" for the Aboriginal Workforce Participation Initiative.

Sudbury District

Management units: Lower Spanish Forest, Spanish River, Sudbury Forest

The ten First Nations within Sudbury District are M'Chigneeg (formerly West Bay), Ojibways of Sucker Creek, Sagamok Anishnawbek, Sheguiandah, Sheshegwaning, Wahnapitae, Wauwauskinga (formerly Whitefish River), Whitefish Lake, Wikwemikong, and Zhiibaahaasing (formerly Cockburn Island).

Discussions within this district are at an advanced stage. There is much participation amongst First Nation communities and a large number of contracts and licences have been issued. Approved future forest management plans indicate a continuing effort to provide First Nations with contract opportunities in the Sudbury District.

Whitefish Lake First Nation had two surveying contracts on a total of 5,781 hectares and Whitefish River First Nation was contracted to manually tend 19 hectares for $8,550. Several First Nations were contracted to harvest within the district. The Sagamok Anishinabek First Nation was allocated 22,099 cubic metres for harvesting. The SFL holder also entered into a contract with the Sagamok First Nation to plant 284,157 trees for an estimated $44,000. The Wikwemikong First Nation was issued a salvage licence for 1,400 cubic metres of wood and two additional contracts for pre-commercial thinning of a total of 546 hectares. Another contract was

issued to Wikwemikong for picking 400 hectalitres of cones. The West Bay First Nation engaged in a second pass harvest of white and red pine and white birch veneer with unreported harvest levels. A conglomerate of ten First Nations was allocated 41,600 cubic metres of wood for harvesting. N'Swakamok First Nation, a forestry company representing 5 First Nations, harvested 3,000 cubic metres of wood and 80 hectalitres of cones.

The total reported First Nation district wood allocation level was 68,099 cubic metres, a substantial increase from the 15,200 cubic metres of wood reported for the previous year.

Two private Aboriginal contracting companies had a tree-planting contract for 184,000 trees and a manual tending contract of 190 hectares. First Nation employment was estimated at 35 individuals within the district.

Twelve individuals from local First Nations attended a tree-marking training course sponsored in part by the MNR. The SFL holder provided operational tree-marking training and certification for six members from Sagamok Anishanawbek First Nation. An employment opportunity was provided for a Lakehead University Student from the Wikwemikong First Nation.

The Wauwauskinga First Nation was awarded a contract to perform an upcoming regeneration assessment on 1,900 hectares of land in the amalgamated Spanish Forest.

Thunder Bay District

Management units: Armstrong Forest, Black Sturgeon Forest, Brightsand Forest, Dog River-Matawin Forest, Kiashke River, Lakehead Forest, Spruce River Forest

The four First Nations located within Thunder Bay District are Fort William, Gull Bay, Lac Des Mille Lacs, and White Sand. In addition, Thunder Bay District has been consulting with a number of Aboriginal communities and Metis organizations.

White Sand First Nation had an allocation to harvest 283,500 cubic metres of wood. Other contracts were provided for planting 1.1 million trees, 1,500 hectares of site preparation, pre-commercial thinning of 120 hectares, slash pile burning, and cone collecting. A student from the White Sand First Nation was provided employment for the summer. White Sand First Nation is a member of the forest management planning team for the Armstrong Forest. Regular community meetings were held as part of the native consultation process.

North Block and Niigaani Enterprises from Gull Bay First Nation were allocated a total of 233,000 cubic metes of wood. Lac Des Mille Lacs had an allocation to harvest 46,600 cubic metres of wood. The Black Bay Metis Association was also allocated 24,000 cubic metres and contracted to plant 131,000 trees. The Red Rock Indian Band also carried out silviculture work and participated as a member of the management planning team. Several First Nations were contracted for, or completed, Native Background Information Reports and Native Values maps.

Timmins District

Management units: Romeo Malette Forest, Shiningtree Forest, Timmins Forest, Timmins

Mattagami is the only First Nation in the district. Flying Post Reserve is also within the Timmins District boundary but all residents live off the reserve, mainly in Nipigon. Timmins District has attempted, in conjunction with Nipigon District, to establish contact with this First Nation.

Mattagami First Nation has active members on the forest management planning teams for the Shiningtree and Romeo Malette 2001 Forest Management Plans and the Matachewan First Nation (located in Kirkland Lake District) has a member on the Timmins 2001 Forest Management Plan team.

A needs assessment meeting was conducted with the Mattagami First Nation as part of the Domtar First Nation Development Policy for Shiningtree Forest Inc. Domtar Inc. has also held cultural awareness training sessions for its employees. No harvesting licences, allocations, or contracts were issued during 1999/00. A pre-commercial thinning contract was offered to the Mattagami and Matachewan First Nations prior to being accepted by the Wahgoshig First Nation.

The MNR district co-sponsored four co-op students in the Aboriginal Technician Program at Sault College and hired two summer forest technicians from the Mattagami First Nation. Domtar Inc. also hired two summer students and Tembec Industries Inc. hired one student for forest-related work.

Discussions are also underway with Mattagami First Nation regarding other relevant resource issues, including trapline management, nuisance beavers, and the establishment of a trappers' council.

Wawa District

Management units: Big Pic Forest, Black River Forest, Magpie Forest, Nagagami Forest, Wawa Forest, White River Forest

The three First Nations located in the Wawa District are Hornepayne, Michipicoten, and Pic Mobert. Discussions also take place with Pic River First Nation located adjacent to Wawa District but within the Big Pic Forest.

Michipicoten First Nation has an annual wood allocation of 1,000 cubic metres for harvesting. The Pic Mobert First Nation has actively participated in forest management planning activities within the district and has an FRL of greater than 100 hectares in the White River Forest. The Pic Heron Bay Development Corporation was allocated an FRL on the Black River Forest totaling 16,870 cubic metres. Pic River First Nation had a wood allocation of 48,200 cubic metres for harvesting. The MNR contracted a community member to collect information for the Native Background Information Report and Native Values Map.

Hornepayne First Nation has an estimated 25 members employed in the forestry sector. The MNR also contracted a community member to collect information for the Native Background Information Report and Native Values Map.

Chapter 10

Ongoing Development and Future Directions

Ministry of Natural Resources keeps pace with the constantly expanding knowledge base for sustainable forest management through scientific research, technical development, and policy development programs. These programs span a wide range of subjects including: the development of better data and information sources; the creation and implementation of new policies, procedures, and guidelines for forest management planning; the development of new forest management methods, models, and tools; and, continuing long-term monitoring programs and scientific studies.

This chapter outlines the progress MNR has made, in cooperation with its partners, on specific scientific, technical, and policy development programs up to, and including, 1999/00.

New and Improved Data and Information Sources

Term and Condition #81 (T&C # 81)

Provincial Wildlife Population Monitoring

Term and Condition 81 of the Timber Class EA was initiated in 1995 through partnerships with other monitoring agencies. In 1996, MNR established the Wildlife Assessment Program, involving the staffing of three assessment units in North Bay, Timmins, and Thunder Bay.

The Wildlife Assessment Program continued the monitoring partnerships with external parties and began the implementation of its monitoring approach for the AOU during 1999/00.

Monitoring partnerships included continuing support for Bird Studies Canada (formerly the Long Point Bird Observatory) to monitor forest bird migration, owls, and red-shouldered hawks, as well as supporting the University of Guelph in its ongoing small mammal monitoring in Algonquin Park. To implement AOU-wide monitoring for small mammals,

forest birds and amphibians, the Wildlife Assessment Program began to establish a network of randomly-selected, geographically-distributed permanent sample sites that are representative of major forest types. Pilot studies for testing field sampling protocols continued for these species. The forest bird survey partnership with the Canadian Wildlife Service was also continued, along with furbearer monitoring through mail surveys to trappers.

Term and Condition #96 (T&C #96)

Silvicultural Effectiveness

In 1999/00, work continued on the draft *Silvicultural Effectiveness Monitoring Manual for Ontario*. The objective of the manual is to describe Ontario's requirements for silvicultural effectiveness monitoring, which is used to determine if silvicultural management activities are producing the expected results. The new manual will provide consistency on how silvicultural information is reported and analyzed. Consistent definitions and standards will ensure that the results from forest management activities on similar sites and forest conditions are comparable between stands and between management units across the province.

Work has also continued on the development of survey methodologies to collect silvicultural effectiveness information. In particular, work continued on the Silvicultural Treatment, Assessment and Reporting System (STARS), a computer-based, data collection and analysis system designed to simplify silvicultural effectiveness monitoring and reporting. As well, development continues on refining the *Free Growing Regeneration Assessment Manual* which provides a regeneration assessment system intended for application to all species and stands managed under the clearcut silvicultural system. These systems, when fully developed, will be used by MNR to substantiate "spot check" information and by independent forest auditors to conduct their regeneration field assessments.

Term and Condition #97 (T&C #97)

Forest Ecosystem Classification Program

The Ecological Land Classification Program (ELC) is mandated with the establishment of a comprehensive and consistent province-wide framework for ecosystem description, inventory, and interpretation. The ELC is required to address a full range of scales from ecoregionalization to site/community level. The combination of consistent classification and ecosystem-based inventory tools is pivotal to the achievement of MNR's

objectives for ecologically sustainable resource management. The ELC is intended to provide a common language and information framework for planning, management, and monitoring. The current mandate is derived from legal requirements of the Timber Class EA, as well as the need for ecologically-based planning and reporting at various scales.

Traditional forest inventory is focused on commercial species without an ecological context. Current work in the ELC is intended to facilitate a shift to a comprehensive, multi-scaled ecological inventory in which traditional forest inventory information is embedded.

During 1999/00, ELC sampling continued in the southern portion of the province. This third year of comprehensive data collection brings the southern data set to approximately 1,000 plots. Data collection was also started in the far northern portion of the province. Reconnaissance and preliminary data were gathered in the vicinity of Pikangikum/Berens River in northwestern Ontario.

The first approximation of the ELC for southern Ontario was published this year.

Training courses in the use of the ELC were offered in all parts of the province. Instruction was provided to a wide array of natural resources professionals, non-government organizations (NGOs), First Nations, forest industry, and partner organizations.

Work is ongoing on various aspects of integrated inventory approaches. A comprehensive training manual for photo-interpretation and inventory of the Northwest ELC was published. Substantial portions of Northwestern Ontario are now being mapped.

Using both the ELC classification approaches and the new ELC-based inventory, new definitions have been developed for old growth forest conditions in Ontario. Work completed during 1999/00 will be published in late 2001.

Additional ELC-based interpretations dealing with non-timber forest products, intensive forest management, and forest management planning are also under development.

During 1999/00, the ELC program undertook a full conceptual and technical review. A revised system architecture and technical standards are to be completed during 2000/01. Current emphasis is on completion of core classification products based on the revised provincial classification archi-

tecture, developing spatial technologies for ecosystem inventory at various scales, and providing practical management applications of the ELC for management planning processes through the development of interpretive tools.

Term and Condition #99 (T&C #99)

Areas of Natural and Scientific Interest (ANSIs)

Areas of Natural and Scientific Interest are areas of land and water containing natural landscapes or features that have been identified by MNR as needing protection of such values as natural heritage appreciation, scientific study, or education. They are classified as either life science, earth science, or combined, and are protected during forest management planning through the AOC process.

During 1999/00, *Ontario's Living Legacy Land Use Strategy* was finalized and the implementation phase began. Mapping of boundaries for interim withdrawal from mining and staking activity was completed in May 1999. Subsequently, the regulation process for the first subset of the protected areas contained within the Land Use Strategy began, and nine protected areas were regulated. The regulations will take approximately four years to complete.

In conjunction with the Ontario Forest Accord, a working group made up of members from the three signatory parties to the Accord began work to identify and priorize remaining gaps in ecosystem and earth science representation. An overlay approach was developed, where gaps priorized by MNR and the Partnership for Public Lands could be viewed simultaneously. This work extended into 2000/01.

Life Science

As part of the implementation process for areas protected by Ontario's Living Legacy, analyses of landform/vegetation features were conducted to determine overall levels of ecosystem representation, and to assist in finalizing the boundaries prior to regulation. These analyses were site-based, and the sites being regulated were scattered among numerous ecodistricts across all three administrative regions.

Presentations on MNR's approach to gap analysis and the outcomes of the Ontario's Living Legacy planning process were made at various conferences and workshops, including, among others, a geographic information system (GIS) conference at Ryerson Polytechnic University in Toronto,

interprovincial planning sessions in Peterborough, the annual meeting of the Canadian Council on Ecological Areas in Ottawa, and the Annual Meeting of the U.S. Gap Analysis Program in Duluth, Minnesota.

Conservation land securements continued to be achieved through a partnership with the Nature Conservancy of Canada, utilizing various mechanisms (purchases, donations, conservation easements). These securements were concentrated in the southern part of Ontario (mainly, but not exclusively, within ecoregions 6E and 7E). In support of this partnership, priority lists for securement were developed. Ministry of Natural Resources also participated as a major partner in the development of a "Big Picture" vision to help focus natural heritage conservation actions in the Carolinian Zone of Ontario (ecoregion 7E). Ministry of Natural Resources staff also began participation with numerous partners from Michigan, Wisconsin, Minnesota, Manitoba, and Ontario in an ecoregional planning project for the Superior Mixed Forest Ecoregion [including ecoregions 4W and 5S in Ontario].

Earth Science

The bulk of the earth science work revolved around the Ontario's Living Legacy planning process. New protected areas proposed by Ontario's Living Legacy were reviewed with the intent of determining mineral potential and issues, as well as refining boundary decisions. Ongoing work with regard to the Ontario Forest Accord included a study of selected priority earth science sites for addition to the Partnership for Public Lands sites. This included an exhaustive airphoto review supported by reconnaissance-level field work northeast of Lake Nipigon.

In addition, field work was ongoing on several projects not associated with Ontario's Living Legacy, including a review of the geological values of selected properties on Manitoulin Island and new protected area acquisitions on the Bruce Peninsula, and a review of selected earth science ANSIs in Midhurst District.

Term and Condition #100 (T&C #100)

Growth and Yield Studies

The Forest Growth and Yield Program was established in 1991 to provide forest managers with better information on the growth and dynamics of Ontario's forests. Beginning in 1992, a province-wide network of new permanent sample plots (PSPs) was established over a range of forest sites and management conditions. Data collected from these plots provides

information to forest managers and researchers on site and soil conditions, vegetation composition, tree growth, regeneration and mortality, and wildlife habitat conditions in Ontario's forests. To date approximately 1,000 new PSPs have been established.

In 1999/00 the Growth and Yield Program focused primarily on three main areas: the establishment of new plots; the relocation, maintenance, and remeasurement of existing plots; and, the initiation and scoping of forest modeling projects.

Establishment of New Plots

Cooperative efforts to install new single-day permanent growth plots (PGPs) by the forest industry were undertaken in 1999/00. Permanent growth plots are traditional 400 square metre plots that are intended to track wood fibre growth and be responsive to Forest Management Planning needs. They differ from PSPs in that they are not clustered, and do not monitor non-timber attributes such as coarse woody debris or snags. To support this PGP establishment effort, a new PGP field manual was developed. During 1999/00, 91 new PGPs were established.

Thirty-two new PSPs were also established, primarily in provincial parks, through additional funding from the "Climate-Change" initiative. Previously under-sampled forest conditions were the targets for these plots. These data were also used in support of Ontario Carbon-Budget modeling efforts.

Relocation, Maintenance and Remeasurement of Existing Plots

An effort was made to maintain and remeasure as many provincial PSPs as fiscally possible. During 1999/00, 85 existing provincial PSPs were remeasured.

A concerted effort was also made to relocate historical plot systems and historical data. In most cases these historical PGPs were established by the forest industry in the 1950s and later abandoned. In other cases, this plot relocation work focused on relocating PGPs that were established by MNR years ago for other purposes. Relocating and remeasuring these old plot systems, along with their corresponding data, provides growth and yield estimates not otherwise available from the current provincial PSP network. During 1999/00, 275 historical/abandoned PGPs were remeasured.

Modeling Projects

Ontario also embarked in 1999/00 upon the scoping of a growth and yield modeling tool called "FVS^{ONTARIO}". FVS^{ONTARIO} version 1.0 is a metric form of the Forest Vegetation Simulator model from the United States. Meetings were held with experts from academia, consulting firms, research scientists and experts from British Columbia to determine whether this modeling framework was appropriate for Ontario, and to determine a logical path for development. An internal strategy for moving forward with FVS^{ONTARIO} was drafted.

New Policies, Procedures and Guidelines

Term and Condition #27(c) (T&C #27(c))

Clearcut Restrictions

Ontario's *Forest Management Planning Manual* requires documentation for all planned clearcut areas by size class, and the rationale for any clearcut areas that exceed 260 hectares in size. These new reporting requirements began with the 1996/97 harvest year (but were reported in the following year in management unit annual reports). Provincial level reports were included for the first time with the 1998/1999 annual report.

Term and Condition #52(e) (T&C #52(e))

Water Crossing Removal Criteria Development

A committee of technical experts from MNR, MOE, and the forest industry developed a set of criteria to be used in decisions on the removal of water crossing structures for roads which are planned to be abandoned. The set of criteria which addressed biological, engineering, water quality, and safety considerations are outlined in an October 1997 report entitled, *Criteria for the Removal of Water Crossings of Abandoned Roads.*

Term and Condition #94(b) (T&C #94(b))

Environmental Guidelines

Ministry of Natural Resources was required by the Timber Class EA to produce an implementation manual referred to as the *Environmental Guideline for Timber Management Activities*. This guideline was to provide direction in relation to timber harvest layout, configuration, and clearcut sizes, and to address the protection of the physical environment in the course of forest harvest, renewal, and maintenance.

The approach MNR took to meet this requirement was to initiate the development of two separate guidelines that address: 1) protection of the physical environment; and 2) timber harvest layout, configuration, and clearcut sizes.

In response to the first requirement, the *Forest Management Guidelines for the Protection of the Physical Environment* was published in January 1998.

As the result of a condition on the denial of a request for an individual EA on the 1999 Temagami Plan (November 1999), MNR was compelled by MOE to produce a first draft of the *Fire Simulation Guidelines* by September 2000. A multi-disciplinary writing team (MNR, industry, and NGOs) was brought together in December 1999 by MNR to begin the task of writing the guidelines and the work continued for the balance of the year.

Term and Condition #94(c) (T&C #94(c))

Guidelines for Pine Marten and Pileated Woodpecker Habitat

Ministry of Natural Resources was required by the Timber Class EA to develop two new guidelines: 1) *Forest Management Guidelines for the Provision of Marten Habitat;* and, 2) *Forest Management Guidelines for the Provision of Pileated Woodpecker Habitat.* As previously reported in the 1996/97 annual report, both guidelines were published in May 1996.

Term and Condition #98 (T&C #98)

Northern Ontario Wetlands Evaluation System

As previously reported in the 1995/96 annual report, the requirement to develop a Northern Ontario Wetlands Evaluation System has been delivered.

The evaluation system was designed to allow a relative ranking of the importance of wetlands based on numerical scores assigned to biological, physical, and social attributes. Wetlands that are highly ranked are considered to be of provincial significance and are protected by wetlands policy.

A system for evaluating wetlands in southern Ontario has been in place since 1984. This system was modified for use in northern Ontario. *The Ontario Wetland Evaluation System Northern Manual* was published in March 1993, with a revised manual released in May 1994.

Term and Condition #103(a) (T&C #103(a))

Old Growth Conservation Strategies

The goal of the old growth conservation strategy is to ensure that old-growth forest ecosystems are maintained in the landscapes of Ontario now and into the future. This comprehensive strategy will be implemented through ecological land use and resource management planning processes.

In 1997, MNR drafted *A Conservation Strategy for Old Growth Forest Ecosystems on Crown Lands in Ontario*. A notice requesting public comment on this draft document was posted on the Environmental Bill of Rights (EBR) registry. No comments were received. No additional work was done in 1999/00.

Term and Condition #106 (T&C #106)

Roadless Wilderness Areas Policy

In May, 1997, the Ministry of Natural Resources released Version 1.0 of a policy entitled Ontario's Approach To Wilderness, as required by T & C #106. The Roadless Wilderness Areas Policy states that wilderness values will be accounted for under the auspices of land-use planning and resource management planning, such as MNR's Lands For Life planning process (now entitled Ontario's Living Legacy), and under policy, legislation, and management programs developed in support of sustainable natural resource management in Ontario. The Roadless Wilderness Areas Policy states that MNR will engage in three initiatives and MNR is currently working in the following areas in support of these initiatives.

a. To identify and establish outstanding wilderness parks and wilderness zones

As stated in *Ontario's Living Legacy Proposed Land Use Strategy*, the MNR has concluded that the park class targets have been achieved to the extent possible within the planning area. Consideration will continue to be given to the park class targets in planning for the portions of site regions and districts that extend beyond the Land Use Strategy planning area. A planning and consultation process will be developed to consider future suggestions for areas that may provide improved representation of natural heritage features. Any potential protected areas will be subject to broad public consultation through a formal planning process. Wilderness zones in parks will be identified through parks management planning.

b. To continue to work with partners and clients in order to protect wilderness values in southern Ontario

Work is ongoing in southern Ontario, and will be completed as directed in the document *Nature's Best, Parks and Protected Areas: A Framework and Action Plan*. For example, land securement under the Ontario Parks/Nature Conservancy of Canada Legacy 2000 Program, the MNR/Nature Conservancy of Canada Community Conservancy Program, and the Natural Areas Protection Program contribute to the protection of significant natural heritage values. Private land stewardship initiatives such as the Conservation Land Tax Incentive Program also contribute to the protection of significant values.

c. To identify and define the extent to which programs implemented on the intervening landscapes and waterscapes contribute to the maintenance and enhancement of wilderness characteristics, and to determine if there are any changes required to existing resource management and operational planning guidelines

An internal working group was formed by MNR to address the management of wilderness characteristics on the intervening landscapes, outside parks, and other types of protected areas. The working group, comprised of MNR staff, has completed a draft report that examines the contribution of management programs to the maintenance and enhancement of wilderness characteristics on the intervening landscapes and waterscapes. This draft report is currently undergoing review and revision.

Term and Condition #110 (T&C #110)

District Land Use Guidelines

In February 1997, the Ministry initiated a comprehensive land-use planning process for Crown lands in the AOU. During 1997 and 1998 a variety of land-use proposals were developed that were subject to extensive public consultation. In March 1999, a Proposed Land Use Strategy was released for public review, and over 8,000 comments were submitted. In July 1999, the approved *Ontario's Living Legacy Land Use Strategy* was released.

The *Ontario's Living Legacy Land Use Strategy* replaces the *Northwest and Northeast Strategic Land Use Plans*, and the *Southern Ontario Coordinated Program Strategy*, for the AOU. Wherever the new Land Use Strategy and the 1983 District Land Use Guidelines address the same

topics, the *Ontario's Living Legacy Land Use Strategy* provides the current direction. The *District Land Use Guidelines* will continue to provide some detailed land use and resource management direction, particularly for the General Use Areas land use designation, because the new strategy does not provide any specific direction for this designation. Local land use direction in the *District Land Use Guidelines* and other documents will be brought into conformity with the strategy through subsequent planning.

New Forest Management Methods, Models and Tools

Term and Condition #80 (T&C #80)

Long-Term Scientific Studies and Research

Tourism Effects Research

This study is designed to assess the effectiveness of the provincial *Timber Management Guidelines for the Protection of Tourism Values*, and to determine the effects of forest management on tourism values. Several initiatives contributed to the work on this study in 1999/00.

Work on the shoreline aesthetics project continued during the year. In the summer, field crews continued to inventory and monitor sites with various natural and harvesting disturbances. During the fall, many data collection sessions were conducted throughout Ontario to gather public evaluations of the aesthetic quality of northern Ontario shoreline sites. Analyses have focused on determining the relationships between the aesthetic evaluations of sites and the physical description of these sites.

Second, analysis of the responses to the resource-based tourism operator questionnaire were completed. The data collection and subsequent analysis helped to determine the perceptions of tourism operators about the forest management planning process and the *Timber Management Guidelines for the Protection of Tourism Values*. The data also provided an opportunity to develop a framework for assessing the sustainability of the resource-based tourism industry in Ontario.

Finally, the implementation, analyses, and results of a questionnaire about moose hunting was completed with Thunder Bay District hunters. This study provided an opportunity to determine the relationships between forest management activities and the behaviors of moose hunters. The study also provided an opportunity to assess the degree of conflict

between recreationists and tourist operators over road access issues that exist because of the forest industry's need to expand road networks.

Moose Guidelines Evaluation

This project is assessing the effectiveness of *Ontario's Timber Management Guidelines for the Provision of Moose Habitat*, and will determine the effects of current forest management practices on moose and other wildlife habitat. The following activities were carried out in 1999/00:

- An agreement with Lotek Engineering was made to actively participate in the development of biotelemetry data analysis protocols to address issues of data handling, collation, and analysis, through the Chair in Biotelemetry at the University of Waterloo.
- Collection and spatial analysis of location data for 60 moose on the first intensive study site was continued; data recorded on Global Positioning System (GPS) collars were downloaded in late June and late September 1999, as well as at the time of collar recovery/refurbishment in February 2000; thus far, more than 1 million records have been downloaded from GPS collars.
- Studies of moose calving sites in the first Moose Guidelines Evaluation Project study area were continued.
- Testing of differential correction software from Lotek Engineering Inc., and further development of home range analysis software was continued.
- Studies of moose condition associated with habitat use in conjunction with the capture/collaring operation were continued: blood, hair and fecal samples were again collected at the time of capture; body measurements and condition scores were recorded for each animal; ultrasound measurements of back fat were made on each moose; complete profiles of blood samples and mineral content of hair samples were again determined by the Animal Health Laboratory, University of Guelph; blood samples were forwarded to the Wildlife Forensic DNA Laboratory, Trent University, for genetic assessment; serum samples were analyzed for pregnancy-specific protein B by BioTracking, Moscow, Idaho; serum samples were also analyzed for insulin-like growth factor 1 by the Veterinary Teaching Hospital, Michigan State University; and, fecal samples were analyzed for corticosterones at the Center for Wildlife Conservation, Seattle, Washington.

Landscape Analysis of Wildlife Habitat

This research program is examining the effects of the *Timber Management Guidelines for the Provision of Moose Habitat*, and other forestry practices, on wildlife habitat. The research was initially restricted to moose, but is now beginning to examine the effects of the guidelines on other wildlife.

The focus of the research is on characterizing the effects of logging on habitat patch size and configuration, and on developing predictive models of how changes in landscape configuration influence the quality of wildlife habitat. An important component of the research is comparing landscape patterns created through logging with those created by natural disturbance processes.

Work has begun on the development of a new multi-scale, habitat-modeling tool (LSL/CPAT) to facilitate spatially explicit habitat modeling, and evaluation of other spatial objectives, as defined in forest management plans. This computer program will be essential for implementing new directions in both the moose habitat guidelines and in the simulation of natural fire disturbance patterns.

New research has also been initiated to field test the spatial habitat models by observing breeding-bird population response to forest disturbance. In 1999/00, work was conducted to test a new high sensitivity recording system (CVX microphone) to facilitate rapid collection of songbird biodiversity data. In 2000/01, the CVX microphone system will be used in a full-scale research project to test the effects of landscape pattern on songbird distribution and abundance.

Aquatic Effects Research

These long-term scientific studies are designed to assess the effectiveness of the provincial *Timber Management Guidelines for the Protection of Fish Habitat*, with an emphasis on the numerical measurement and modeling of land-use effects on aquatic ecosystems in northern Ontario. To date, aquatic effects research has been addressed through two integrated projects, the Coldwater Lakes experimental watersheds and the Comparative Aquatic Effects Program.

The Coldwater Lakes study was initiated northwest of Atikokan in 1990, to experimentally evaluate the effects of logging on lake ecosystems and to provide information about the effectiveness of shoreline reserves in preventing those effects. Five years of intensive pre-harvest monitoring

(1991-95) was followed by "worst case" experimental logging in 1996 (large cuts) and 1998 (secondary cuts), and four years of post-harvest monitoring (1997-00). Minor to moderate aquatic impacts, similar to those caused by wildfire, have been observed in the three impacted lakes, primarily as temporary increases in nitrogen, potassium, and dissolved organic carbon in lake water, and up to a 25 percent decline in water clarity. Three to five years of further monitoring at reduced intensity are required to extract the full benefit from this experiment. These and other early results (many now published in primary scientific literature) suggest that the *Timber Management Guidelines for the Protection of Fish Habitat* and accompanying policy may be conservative in some respects, and that some shoreline forest reserves may be safely harvested and regenerated without harm to aquatic habitat or water quality. Adaptive management experiments to test the reliability and transferability of these results to other areas of northern Ontario are now being planned.

The Comparative Aquatic Effects Program began in 1995 to measure the effects of timber management on aquatic ecosystems in Ontario's Boreal Forest and to test the effectiveness of current timber management guidelines on preventing or minimizing these effects. To date, the program has focused on measuring timber-harvest effects on coldwater streams. Because coldwater stream habitat is tightly integrated with the surrounding landscape, it is expected to be sensitive to disturbances in the surrounding catchment. The program is investigating a number of areas including the key aquatic habitat variables to monitor the effects of timber harvest, the spatial scale of harvest impacts on aquatic ecosystems, the use of buffer strips to prevent sediment from moving overland and into waterways, and the effects of logging roads as barriers to fish migration.

Term and Condition #101 (T&C #101)

Full-Tree Harvesting and Long-Term Site Productivity

This 20-year study was established in 1993 to provide a quantitative assessment of the effects of full-tree harvest and full-tree chipping on ecosystem processes, which ultimately influence site productivity for a range of black spruce-dominated ecosites.

In 1999/00, field and laboratory work focused on the establishment of a wildfire chronosequence (stands of different ages originating from wildfire) and ten sites were added to the database for modal soil conditions. As with the experimental harvest sites, data collection on these chronosequence sites was designed to calculate nutrient and carbon pools (above and below ground), as well as to provide estimates of key ecosystem processes. These patterns and processes documented for natural stand conditions can, in turn, be used as natural "benchmarks" when comparing and evaluating harvest-related impacts to these processes.

Term and Condition #102 (T&C #102)

Tending and Protection Improvement Programs

Ministry of Natural Resources has a number of ongoing projects related to pest management (insects and diseases) and vegetation management. Either on its own, or in partnership with other provinces and the private sector, MNR has funded a number of research projects in these two areas.

Pest Management

The Canadian Forest Service (CFS) has been supported by MNR in the testing of neem, a botanical insecticide, for the control of insects affecting trees. This product is effective against insects, such as sawflies, which are not susceptible to the commonly used product *Bacillus thuringiensis* (B.t.). In particular, MNR has supported studies looking at the aquatic impacts of neem, as well as the development of methodologies for its aerial application. The work is being done in partnership with the CFS, the County of Simcoe, and the provinces of New Brunswick and Newfoundland.

Other projects related to the pest management aspect of T & C #102 include:

- Support of a CFS study into the impacts, ecology, and control methods for pine false webworm (in partnership with the Department of National Defense and the County of Simcoe)
- Testing of the Advanced Integrated Multidimensional Modeling Software 2 (AIMMS 2) guidance system, which uses weather parameters from the forest canopy to adjust the location of aerial spray lines so as to minimize off-target drift and optimize the even deposit of the spray over the target stand (in partnership with the province of New Brunswick and Forest Protection Limited)

- Testing of new B.t. products for controlling spruce budworm (in partnership with the CFS, and with funding from pesticide manufacturers)
- Ongoing trials to refine the pheromone for jack pine budworm for use as a detection method and possible control measure (in cooperation with Simon Fraser University)
- Support to the CFS in an on-going research project to develop early intervention strategies to reduce, or slow, the build up of spruce budworm populations
- Support to the University of Toronto to examine the role of natural enemies in the population dynamics of the European pine shoot beetle, a recently introduced insect
- Support to the CFS for research towards developing a hazard rating system for pine shoot beetle
- Support to the CFS to conduct field trials of new lures for trapping pine shoot beetle, in collaboration with the U.S. Forest Service
- Support to the CFS to publish the proceedings of a workshop on managing the pine false webworm
- Support to a University of Toronto study into the impacts of site preparation methods on the biodiversity of insect fauna, in collaboration with Domtar Inc.
- A study conducted by MNR into the impacts of pine false webworm on native pines
- Funding of a graduate student with the University of Toronto to assess bark beetle responses to the 1998 ice storm
- Funding to the CFS to develop field guides to the insects of Ontario conifers, and insects of Ontario hardwoods
- Conversion of the Spruce Budworm Decision Support System to Ontario forest management and forest resource inventory models, in collaboration with Tembec Industries Inc. and the Canadian Forest Service
- Support to the University of New Brunswick to investigate the role of intensive forest management practices in sawfly outbreaks

Vegetation Management Alternatives

Since 1991, the focus of the Vegetation Management Alternatives Program (VMAP) has been to reduce dependence on herbicides in Ontario's forests by developing effective, safe, economically-viable alternatives, along with a better understanding of forest ecosystems. This has been accomplished through basic and applied research, education, and field delivery.

With financial support from Tembec Industries Inc., Bowater Pulp and Paper Canada Inc., Natural Resources Canada, and MNR, six vegetation management trials established under the VMAP program were reassessed. A journal manuscript on the application timing and rate of glyphosate was published by the Northern Journal of Applied Forestry. A second manuscript on the digital assessment of plant competition was published by the Forestry Chronicle.

Fundamental research is ongoing to advance the underlying science that supports vegetation management practices, with an emphasis on ecosystems dynamics. Research on the impacts of forest management practices on floral diversity has continued with funding from the Living Legacy Trust.

One of the goals of VMAP is to ensure that the alternatives being developed are environmentally sound. To this end a major study, called the Fallingsnow Ecosystem Project, was established in 1993 to evaluate the effects of five alternative conifer-release treatments on the environment in a young spruce plantation located near Thunder Bay, Ontario. Researchers are comparing the effects of cutting with brushsaws, cutting with a mechanical cleaning machine, and applying herbicides by helicopter, with what happens in untreated control plots and in the adjacent unharvested forest. In June 1999, 1,600 aspen were collected and analyzed for initial signs of decay. Grant Forest Products, Weyerhaeuser, Norbord, Natural Resources Canada, and MNR collaborated to complete this study. In addition, two journal manuscripts on floral diversity were submitted to the Canadian Journal of Forest Research and have been accepted for publication.

A second environmental impact study was established near Parry Sound in central Ontario in 90- to 100-year-old white pine. The objective of this study is to examine the effects of the shelterwood system regeneration cut and four site preparation techniques on the components of white pine ecosystems, including: the overstory (health, seed production); white pine regeneration (establishment, ecophysiology, response to competition); and, ecosystem components (plant diversity and succession, carabid beetle and

salamander populations, downed woody debris, nutrients). An interim report was prepared with support from the Living Legacy Trust.

Partnerships with Natural Resources Canada, Lakehead University, and the forest industry (Abitibi-Consolidated Inc., Bowater Pulp and Paper Canada Inc., Clergue Forest Management Inc., Domtar Inc., Grant Forest Products Inc., Mackenzie Forest Products Inc., Tembec Industries Inc., Weyerhaeuser Canada Ltd., and Westwind Forest Stewardship Inc.) continue to be developed to ensure the continuation of established trials and the initiation of new trials.

Term and Condition #104 (T&C #104)

Socio-Economic Analysis

As identified in the 1995/96 annual report, a Socio-Economic Impact Model (SEIM) has been developed by MNR to help in the determination of economic and social impacts of non-timber values and alternative forest management scenarios in forest management planning. Training on the model is ongoing with forest management planning teams, and the model is updated as required.

Term and Condition #107 (T&C #107)

Biodiversity Assessment, Landscape Management and Wildlife Habitat Supply Modeling

Landscape Ecology

The provincial Forest Landscape Ecology Program (FLEP) is assessing the effects of natural change and human activity on biodiversity and forest sustainability at the landscape level.

The FLEP accomplished the following in 1999/00:

Provincial Terrain Indices

A series of terrain shape, soil moisture, and solar insolation indices were converted from the literature into ArcInfo and calculated for the province using a one hectare digital elevation model (DEM). These indices quantify detailed terrain attributes that are useful for improving soils mapping and predicting vegetation where direct surveys/data are not available. This work is in progress.

Landscape Ecology Searchable Literature Database

An extensive digital literature database was developed from work on numerous landscape ecology and related projects. This database provides users with an extensive set of current landscape ecology references that can easily be searched by author, keyword, subject, or title via the web at the FLEP Intranet website: http://mnrweb.mnr.gov.on.ca/ofri/flepWeb/flep.htm.

Improvement of the ON-FIRE model

The ON-FIRE II model is a stochastic, spatially explicit, raster-based, simulation model to predict the fire regime in boreal Ontario over large areas and long periods (greater than 200 years). Output of this model includes fire size distributions and spatial data layers of the future landscape pattern (e.g., species distribution). The ON-FIRE II model is important for developing policy and planning based on natural disturbance regime benchmarks. To date, the first version of ON-FIRE II (Windows NT/98/95) was completed, including state-of-the-art ignition, propagation, and fire behaviour algorithms, and the first version of the Boreal Vegetation Transition Matrix (VTM).

Boreal Vegetation Transition Matrix

The VTM is designed to predict changes in boreal forest landscapes after catastrophic disturbances at large scales. This model is probabilistic and based on published quantitative knowledge of boreal forest succession, and accounts for climate and local site conditions such as soil moisture and nutrient status. The VTM model is a component of the ON-FIRE II model and is important to the development of policy and guidelines based on natural fire regimes. The first version of the VTM was completed and incorporated in the current version of ON-FIRE II.

Improvement of the LEAP II Decision Support System

The LEAP II package (used to quantify landscape patterns in the forest management planning process) was converted from the UNIX platform to Windows NT/98/95. A special module was added to standardize the data input, analysis parameters, and output to provide simplified and standardized analyses during forest management planning. Detailed training material was developed and transferred to regional specialists.

Net Primary Productivity Assessment System (NPPAS)

The NPPAS allows users to generate surfaces of net primary productivity (NPP) at sub-regional scales using remotely sensed data, at annual intervals with a very low cost. Users can generate summary statistics, including the mean and range in NPP, for the area and time period of

interest. This model is currently used to generate regional estimates for the forest management planning process. The first version of the Windows NT/98/95-based software was completed.

Spatial Assessment of Intensive Forest Management on Tembec Industries Inc. Forest Land

The project goal was to assess the spatial feasibility of intensive forest management within Tembec's license areas in Ontario. The feasibility was assessed based on Ontario's legislation, polices, and guidelines, as well as on forest growth potential/natural disturbance hazard. The final product is a coarse-scale spatial strategy that will form a spatially explicit foundation for further analyses of fine-scale economic, ecological, and social aspects to determine intensive forest management sites. This project is scheduled for completion in 2001.

Wildlife Habitat Supply Analysis

Wildlife habitat supply modeling investigation and development work continues. A habitat supply model has been developed (OWHAM) which includes spatial models for moose, deer, pileated woodpeckers, and red-shouldered hawks for the Great Lakes - St. Lawrence forest region and models for marten for both the Boreal East and the Great Lakes – St. Lawrence forest regions. The OWHAM model is used to assist in the implementation of the pileated woodpecker and marten guidelines in the Great Lakes – St. Lawrence and Boreal East regions. A combined habitat and population model for marten has been acquired and is being tested in support of the eventual evaluation and revision of the marten habitat guidelines. A spatial allocation model (STANLEY) for use with the Strategic Forest Management Model (SFMM) is under development and evaluation. The nonspatial wildlife habitat relationships models (used in SFMM) for the Boreal East and Great Lakes – St. Lawrence forest regions are being revised based on increased availability of empirical data. Work has also continued on two other models in 1999/00: Marten Analyst, to be used in the application of the marten habitat guidelines in the Boreal West; and, Cut Patch Analyst, to be used to assess natural disturbance patterns so that the landscape patterns created by forest harvesting better match those of natural disturbance patterns.

Term and Condition #108 (T&C #108)

Geographic Information Systems

Geographic Information Systems are designed to aid in the capture, storage, organization, analysis, and presentation of complex geographic data using computer systems. They are essential for the full development of modern resource management methods, models, and tools.

In 1994, the MNR selected a GIS software standard. This GIS has been installed in all MNR district and area offices. As well, systems are installed in regional offices, science units, research units, and systems development units. Systems, software, and technical training has been provided.

The MNR has proceeded to build applications using GIS and implemented these systems in appropriate offices. This includes MNR's corporate data repository, the Natural Resources and Values Information System (NRVIS). Geographic Information Systems are being used extensively to support forest management planning as well as corporate initiatives such as Ontario's Living Legacy.

Strategic Forest Management Model

The SFMM model is used in Ontario to explore forest management strategies and options, and to evaluate potential resource benefits, including available supplies of wood products, areas of potential wildlife habitat, and measures of forest diversity. This model is used by MNR to help model and project the development of Ontario's forests through time, in light of natural forest dynamics and the effects of human intervention. The SFMM model can be used to project the future forest condition, forest dynamics, available wood supply, potential wildlife habitat, and forest diversity, through time horizons of 150 to 200 years.

The SFMM model is used widely by MNR and other forest resource organizations, including consultants and forest products companies. It is the core tool used by forest management planning teams to develop "management alternatives, including the Available Harvest Area". These models are also used to support other business areas such as land-use planning regional wood supply strategies.

In 1999/00, MNR continued its ongoing development and transfer of SFMM, including the training of forest management planning teams and the further evolution of the model to version 2.0. This version provides some incremental improvements to work started in 1998/99. This version is currently being tested and has not yet been released.

Appendices

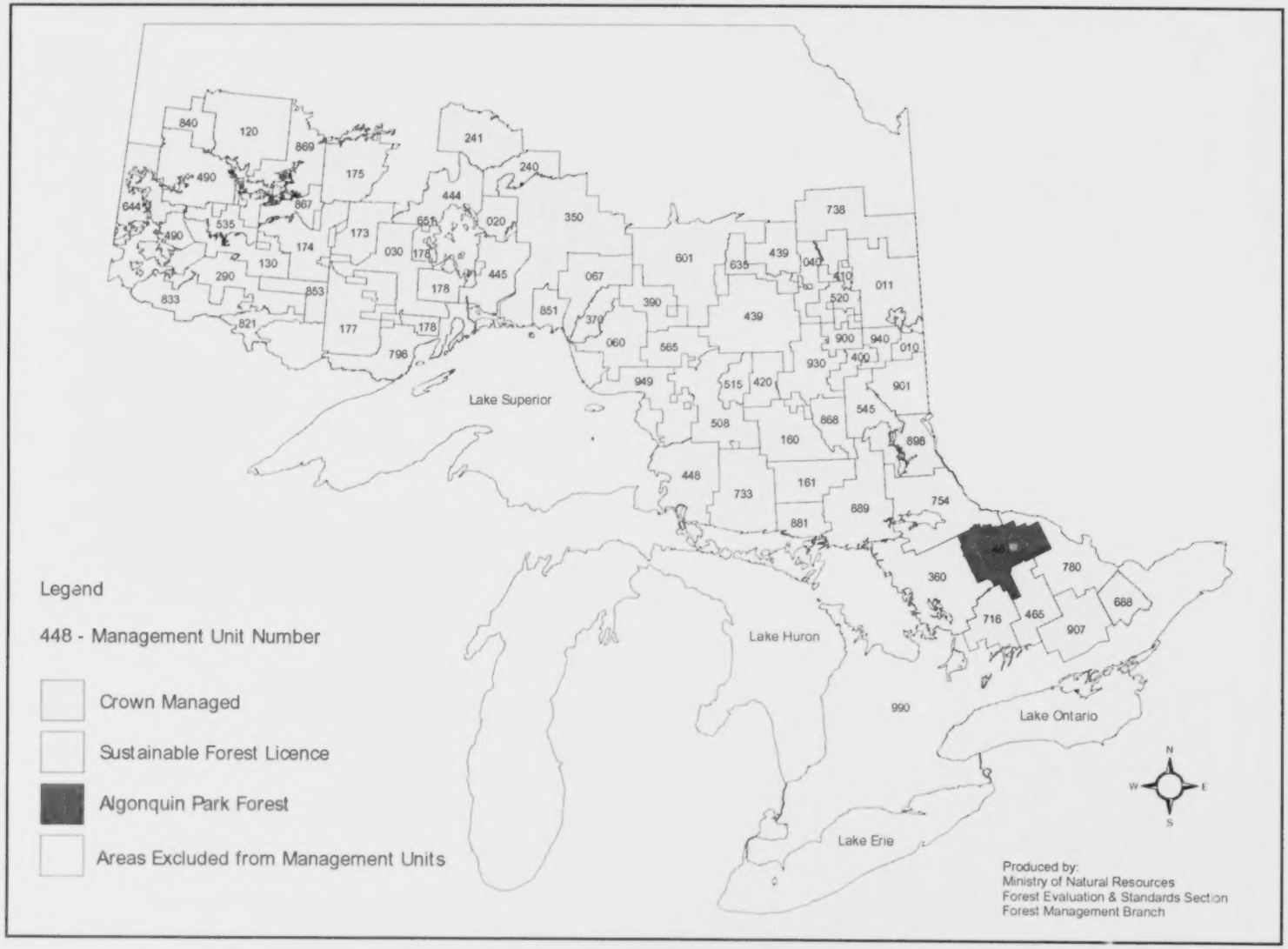
Appendix 1
All Land Classifications Within Inventoried Area 1996

Total Areas by Land Class (hectares)	By Ownership and Type							By Forest Region		ALL
	Crown Lands					Non-Crown Lands		All Ownerships		
Land Classifications	Regular Crown Forest	Parks and Rec. Reserve & Protection	Outside AOU* Northern Units	Outside AOU* Southern Units	Total	Private Forest	Federal Forest	Boreal Forest	Great Lakes St. Lawrence & Deciduous	Grand Total
Forested Land										
Productive Forest	26,004,850.6	3,584,157.5	4,456,454.7	94,060.0	34,139,522.8	5,764,085.3	398,927.4	29,672,153.3	10,630,382.3	40,302,535.6
Non-Productive Forested Land										
Open Muskeg	691,952.7	83,922.6	96,239.8	11,012.0	883,127.1	189,870.9	17,405.1	676,016.3	414,386.8	1,090,403.1
Treed Muskeg	1,232,211.3	108,981.0	1,035,347.9	656.0	2,377,196.1	136,681.7	11,824.0	2,226,403.2	299,298.7	2,525,701.8
Brush & Alder	846,499.8	46,905.5	172,524.1	5,074.0	1,071,003.4	235,002.5	11,058.1	960,521.5	356,542.4	1,317,063.9
Rock	388,042.1	33,171.9	36,785.1	3,371.0	461,370.1	88,350.1	10,384.0	254,926.8	305,177.4	560,104.2
Sub-total:	3,158,705.8	272,981.0	1,340,896.9	20,113.0	4,792,696.8	649,905.1	50,671.2	4,117,867.8	1,375,405.2	5,493,273.1
Non-Forested Land										
Developed Agricultural Land	4,520.4	889.0	0.0	13,666.0	19,075.4	4,602,433.1	12,545.0	102,125.0	4,531,928.5	4,634,053.5
Grass & Meadow	8,089.2		0.0	7,983.0	16,072.2	966,581.5	5,223.0	34,478.5	954,393.1	987,876.6
Unclassified Land	241,087.9	9,019.9	3,045.0	3,599.0	256,751.8	809,533.8	64,917.0	236,353.7	894,849.0	1,131,202.6
Unsurveyed Land	2,767.0	3,106.0	0.0	0.0	5,873.0	27,719.0	192,624.0	6,386.0	219,830.0	226,216.0
Sub-total:	256,464.4	13,014.9	3,045.0	25,248.0	297,772.3	6,406,267.4	275,309.0	379,343.1	6,601,000.6	6,979,348.7
Water	5,627,304.7	259,103.5	1,138,110.0	1,640,433.0	8,664,951.2	2,110.0	9,129.0	4,946,471.7	3,729,718.5	8,676,190.2
Grand Total:	35,047,325.6	4,129,256.9	6,938,506.6	1,779,854.0	47,894,943.1	12,822,367.9	734,036.6	39,115,835.9	22,336,506.7	61,451,347.6
Relative Percentages										
Forested Land	42.3 %	5.8 %	7.3 %	0.2 %	55.6 %	9.4 %	0.6 %	48.3 %	17.3 %	65.6 %
Non-Productive Forested Land	5.1 %	0.4 %	2.2 %	0.0 %	7.8 %	1.1 %	0.0 %	6.7 %	2.2 %	8.9 %
Non-Forested Land	0.4 %	0.0 %	0.0 %	0.0 %	0.5 %	10.4 %	0.4 %	0.6 %	10.7 %	11.4 %
All Land Classifications	47.9 %	6.3 %	9.4 %	0.2 %	63.8 %	20.9 %	1.2 %	55.6 %	30.3 %	85.9 %
Water	9.2 %	0.4 %	1.9 %	2.7 %	14.1 %	0.0 %	0.0 %	8.0 %	6.1 %	14.1 %
Total:	57.0 %	6.7 %	11.3 %	2.9 %	77.9 %	20.9 %	1.2 %	63.7 %	36.3 %	100.0 %

*AOU – Area of the Undertaking

Legend
44B1- Management Unit Number
Crown Mineral
Sustainable Forest Licence
Algonquin Park Forest
Areas Excluded from Management Units

Appendix 2
Management Units in the Area of the Undertaking and Forest Management Planning Responsibilities (Crown Lands) April 1, 1999



Key to Management Units (April 1, 1999) (designated under the Crown Forest Sustainability Act, Section 7)

MU #	MU Name	Status	Region	MU #	MU Name	Status	Region
444	Armstrong Forest	SFL	NW	515	J.E. Martel Forest	SFL	NE
020	Auden Forest	SFL	NW	635	Kapuskasing	CR	NE
178	Black Sturgeon Forest	SFL	NW	161	Lower Spanish Forest	SFL	NE
173	Brightsand Forest	SFL	NW	565	Magpie Forest	SFL	NE
175	Caribou Forest	SFL	NW	733	Mississagi	SFL	NE
177	Dog River-Matawin Forest	SFL	NW	738	Moose River	CR	NE
535	Dryden Forest	SFL	NW	390	Nagagami Forest	SFL	NE
174	English River Forest	SFL	NW	754	Nipissing Forest	SFL	NE
821	Flanders Forest	SFL	NW	420	Pineland Forest	SFL	NE
833	Fort Frances Forest	SFL	NW	930	Romeo Malette Forest	SFL	NE
290	Highrock Forest	SFL	NW	868	Shiningtree Forest	SFL	NE
350	Kenogami Forest	SFL	NW	040	Smooth Rock Falls Forest	SFL	NE
644	Kenora	CR	NW	881	Spanish River	SFL	NE
651	Kiashke River	CR	NW	889	Sudbury Forest	SFL	NE
869	Lac Seul Forest	SFL	NW	508	Superior Forest	SFL	NE
445	Lake Nipigon Forest	SFL	NW	898	Temagami	CR	NE
796	Lakehead Forest	SFL	NW	901	Timiskaming	SFL	NE
240	Nakina North Forest	SFL	NW	900	Timmins	CR	NE
241	Ogoki Forest	SFL	NW	400	Timmins Forest	SFL	NE
840	Red Lake Forest	SFL	NW	160	Upper Spanish Forest	SFL	NE
853	Sapawe Forest	SFL	NW	940	Watabeag	SFL	NE
867	Sioux Lookout Forest	SFL	NW	949	Wawa Forest	SFL	NE
030	Spruce River Forest	SFL	NW	060	White River Forest	SFL	NE
851	Pic River Ojibway Forest	SFL	NW				
120	Trout Lake Forest	SFL	NW	451	Algonquin Park Forest	AFA	SC
130	Wabigoon Forest	SFL	NW	465	Bancroft	CR	SC
490	Whiskey Jack Forest	SFL	NW	360	French-Severn Forest	SFL	SC
				688	Lanark	CR	SC
448	Algoma Forest	SFL	NE	907	Mazinaw	CR	SC
067	Big Pic Forest	SFL	NE	716	Minden	CR	SC
370	Black River Forest	SFL	NE	780	Ottawa Valley Forest	SFL	SC
520	Cochrane	CR	NE	990	Southern Ontario	CR	SC
410	Driftwood Forest	SFL	NE				
545	Elk Lake	SFL	NE				
439	Gordon Cosens Forest	SFL	NE				
601	Hearst Forest	SFL	NE				
010	Iroquois Falls South	SFL	NE				
011	Iroquois Falls Forest	SFL	NE				

Status	Forest Management Planning Responsibility
SFL	Sustainable Forest Licence
CR	Crown
AFA	Algonquin Forest Authority

Appendix 3
Forest Management Plans Approved for Implementation in 1999 and Plans Scheduled for Approval and Implementation in 2000, 2001 and 2002

Forest Management Plans Approved for Implementation in 1999

Management Unit Name	MU#	District	Remarks
Brightsand Forest	173	Thunder Bay	
Elk Lake	545	Kirkland Lake	2 year Contingency Plan
French-Severn Forest	360	Parry Sound	formerly Bracebridge and Georgian Bay
Kapuskasing	635	Hearst	
Lanark	688	Kemptville	2 year Contingency Plan
Magpie Forest	565	Wawa	
Nipissing Forest	754	North Bay	
Temagami	898	North Bay	
Trout Lake Forest	120	Red Lake	
Upper Spanish Forest	160	Chapleau	1 year Contingency Plan
Watabeag	940	Kirkland Lake	
Whiskey Jack Forest	490	Kenora	formerly Patricia Forest and Pakwash Forest

Forest Management Plans Scheduled for Approval and Implementation in 2000 (as of January 2000)

Management Unit Name (current or proposed)	MU#	District	Remarks
Algoma Forest	448	Sault Ste. Marie	
Algonquin Park Forest	451	Algonquin Park	
Armstrong Forest	444	Thunder Bay	
Dog River-Matawin Forest	177	Thunder Bay	
English River Forest	174	Dryden	
Fort Frances-Flanders Forest	833/821	Fort Frances	Fort Frances Forest (833) and Flanders Forest (821) to be amalgamated, new MU # is 827
Gordon Cosens Forest	439/635	Hearst	Gordon Cosens Forest (439) and Kapuskasing (635) to be amalgamated, new MU # is 438
Iroquois Falls Forest	011/010	Cochrane	Iroquois Falls Forest (011) and Iroquois Falls South (010) to be amalgamated, new MU # is 012
Kenogami Forest	350	Nipigon	formerly Longlac Forest, Nakina Forest and Geraldton

continued next page

Management Unit Name (current or proposed)	MU#	District	Remarks (cont.)
Northshore Forest	733/881	Sault Ste. Marie	Mississagi (733) and Spanish River (881) to be amalgamated, new MU # is 680
Sapawe Forest	853	Fort Frances	
Smooth Rock Falls Forest	040	Cochrane	
Spanish Forest	160/161	Sudbury	Upper Spanish Forest (160) and Lower Spanish Forest (161) to be amalgamated, new MU # is 210
Sudbury Forest	889	Sudbury	
Wawa Forest	949	Wawa	

Forest Management Plans Scheduled for Approval and Implementation in 2001 (as of January 2000)

Management Unit Name (current or proposed)	MU#	District	Remarks
Bancroft-Minden Forest	465/716	Bancroft	Bancroft (465) and Minden (716) to be amalgamated, new MU # is 220
Black River Forest	370	Wawa	
Black Sturgeon Forest	178	Nipigon	scheduled for early approval
Dryden Forest	535	Dryden	early renewal by one year
Hearst Forest	601	Hearst	scheduled for early approval
Pineland-Martel Forest	515/420	Chapleau	early renewal by one year, J. E. Martel Forest (515) and Pineland Forest (420) to be amalgamated, new MU # is 765
Kenora	644	Kenora	
Lac Seul Forest	869/867	Sioux Lookout	Lac Seul Forest (869) and Sioux Lookout Forest (867) to be amalgamated, new MU # is 702
Lake Nipigon Forest	445/020	Nipigon	Lake Nipigon Forest (445) and Auden Forest (020) to be amalgamated, new MU # is 260
Mazinaw-Lanark Forest	907/688	Bancroft	Mazinaw (907) and Lanark (688) to be amalgamated, new MU # is 140

continued next page

Management Unit Name (current or proposed)	MU#	District	Remarks (cont.)
Nagagami Forest	390	Wawa	early renewal by one year
Ottawa Valley Forest	780	Pembroke	formerly Pembroke
Pic River Ojibway Forest	851	Nipigon	formerly Steel River, scheduled for early approval
Romeo Malette Forest	930	Timmins	early renewal by one year
Shiningtree Forest	868	Timmins	
Spruce River Forest	030	Thunder Bay	scheduled for early approval
Superior Forest	508	Chapleau	early renewal by one year
Timiskaming Forest	545/901 940	Kirkland Lake	Elk Lake (545), Timiskaming (901), 940 and Watabeag (940) to be amalgamated, new MU # is 610
Timmins	900	Timmins	

Forest Management Plans Scheduled for Approval and Implementation in 2002 (as of January 2000)

Management Unit Name (current or proposed)	MU#	District	Invitation to Participate Tentative Date and Remarks
Big Pic Forest	067	Wawa	March 2000
Caribou Forest	175	Sioux Lookout	February 2000
Crossroute Forest	290/827	Fort Frances	March 1999 (planning process initiated early, Highrock Forest (290) and Fort Frances-Flanders Forest (827) to be amalgamated, new MU # is 405
Lakehead Forest	796	Thunder Bay	February 2000

Appendix 4
Forest-dependent Communities (ranked by percentage of forestry workers)

Census Subdivision	Type	1996 Population	Labour Force	Forestry Workers	% Forestry
Dubreuilville	Township	990	555	360	64.9%
White River	Township	1,025	555	300	54.1%
Terrace Bay	Township	2,325	1,275	605	47.5%
Carlow	Township	430	140	65	46.4%
Longlac	Town	2,075	1,235	570	46.2%
James	Township	485	235	105	44.7%
Ginoogaming First Nation 77	Reserve	220	55	20	36.4%
Dack	Township	480	200	70	35.0%
Iroquois Falls	Town	5,685	2,575	900	35.0%
Red Rock	Township	1,255	675	230	34.1%
Smooth Rock Falls	Town	1,985	975	330	33.8%
Dorion	Township	470	245	80	32.7%
Mattice-Val Cote	Township	935	370	120	32.4%
Val Rita-Harty	Township	1,115	495	150	30.3%
Brudenell and Lyndoch	Township	795	350	105	30.0%
Nipigon	Township	2,205	1,090	325	29.8%
Opasatika	Township	350	155	45	29.0%
Chapleau	Township	2,935	1,415	410	29.0%
Rainy Lake 18C	Reserve	65	35	10	28.6%
Espanola	Town	5,450	2,470	695	28.1%
Head, Clara and Maria	Township	295	125	35	28.0%
Baldwin	Township	695	330	90	27.3%
Constance Lake 92	Reserve	600	185	50	27.0%
Fauquier-Strickland	Township	690	260	70	26.9%
Kapuskasing	Town	10,030	4,655	1,200	25.8%
Sherwood, Jones and Burns	Township	2,140	860	220	25.6%
Ignace	Township	1,785	965	245	25.4%
Atikokan	Township	4,040	1,995	505	25.3%
Duck Lake 76B	Reserve	100	40	10	25.0%
Moonbeam	Township	1,330	605	150	24.8%
Mattawa	Town	2,280	870	215	24.7%
Nakina	Township	570	265	65	24.5%
Dryden	Town	6,685	3,475	840	24.2%
Barclay	Township	1,585	870	210	24.1%
Airy	Township	775	380	90	23.7%

Census Subdivision	Type	1996 Population	Labour Force	Forestry Workers	% Forestry
Thessalon Township	Township	765	380	90	23.7%
Thessalon	Town	1,480	510	120	23.5%
Massey	Town	1,170	440	100	22.7%
Wunnumin 1	Reserve	455	155	35	22.6%
Raglan	Township	825	400	90	22.5%
Hearst	Town	6,015	2,995	660	22.0%
Wollaston	Township	720	300	65	21.7%
Iron Bridge	Village	780	330	70	21.2%
Nipissing, Unorganized, South Part	Unorganized	605	265	55	20.8%
Schreiber	Township	1,795	920	190	20.7%
Glackmeyer	Township	1,095	535	110	20.6%
Hagarty and Richards	Township	1,675	755	155	20.5%
Rainy River, Unorganized	Unorganized	1,525	890	180	20.2%
Hornepayne	Township	1,455	795	160	20.1%
Long Lake 58	Reserve	345	50	10	20.0%

Source: Statistics Canada 1996 Census

Appendix 5
Forest Renewal Charges ($ per cubic metre) for 1999/00

		Rates Charged by Tree Species or Groups of Species						
Region	**Management Unit**	**White and Red Pine Grade 1**	**White and Red Pine Grade 2**	**Hemlock and Cedar**	**Conifer**	**Poplar and White Birch**	**Hardwood Grade 1**	**Hardwood Grade 2**
Northwest	Armstrong Forest	11.00	11.00	2.00	2.00	0.50	8.00	1.50
	Auden Forest	11.00	11.00	4.50	4.50	0.50	8.00	1.50
	Black Sturgen Forest	11.00	11.00	6.00	6.00	0.50	8.00	1.50
	Brightsand Forest	11.00	11.00	6.00	6.00	0.50	8.00	1.50
	Caribou Forest	11.00	11.00	5.50	5.50	0.50	8.00	1.50
	Dog River Matawin Forest	11.00	11.00	6.00	6.00	0.50	8.00	1.50
	Dryden Forest	11.00	11.00	4.90	4.90	0.75	8.00	1.50
	English River Forest	11.00	11.00	5.50	5.50	0.50	8.00	1.50
	Flanders Forest							
	Apr. 1/99- Jun. 30/99	11.00	11.00	5.50	5.50	0.50	8.00	1.50
	Jul. 1/99 - Mar. 31/00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Fort Frances Forest							
	Apr. 1/99- Jul. 31/99	11.00	11.00	5.50	5.50	0.50	8.00	1.50
	Aug. 1/99 - Mar. 31/00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	High Rock Forest	11.00	11.00	5.50	5.50	0.50	8.00	1.50
	Kenogami Forest	11.00	11.00	4.90	4.90	0.50	8.00	1.50
	Kenora	5.00	5.00	3.00	3.00	0.50	8.00	1.50
	Kiashke River	11.00	11.00	6.00	6.00	0.50	8.00	1.50
	Lac Seul Forest	11.00	11.00	5.50	5.50	0.50	8.00	1.50
	Lake Nipigon Forest	11.00	11.00	2.00	2.00	0.50	8.00	1.50
	Lakehead Forest	11.00	11.00	6.00	6.00	0.50	8.00	1.50
	Nakina North Forest	11.00	11.00	6.00	6.00	0.50	8.00	1.50
	Ogoki Forest	11.00	11.00	6.00	6.00	0.50	8.00	1.50
	Red Lake Forest	1.00	1.00	1.00	1.00	0.50	8.00	1.50
	Sapawe Forest	11.00	11.00	4.00	4.00	0.50	8.00	1.50
	Sioux Lookout Forest	11.00	11.00	6.00	6.00	0.50	8.00	1.50
	Spruce River Forest	11.00	11.00	6.00	6.00	0.50	8.00	1.50
	Pic River Ojibway	11.00	11.00	4.50	4.50	0.50	8.00	1.50
	Trout Lake Forest	11.00	11.00	4.50	4.50	0.70	8.00	1.50
	Wabigoon Forest	11.00	11.00	4.50	4.50	0.70	8.00	1.50
	Whiskey Jack Forest	11.00	11.00	6.00	6.00	1.00	8.00	1.50
Northeast	Algoma Forest	11.00	11.00	6.00	6.00	0.50	8.00	1.50
	Big Pic Forest	11.00	11.00	5.00	5.00	0.50	8.00	1.50
	Black River Forest	11.00	11.00	6.00	6.00	0.50	8.00	1.50
	Cochrane	11.00	11.00	5.50	5.50	0.50	8.00	1.50
	Driftwood Forest	11.00	11.00	4.96	4.96	0.75	8.00	1.50

		Rates Charged by Tree Species or Groups of Species						
Region	**Management Unit**	**White and Red Pine Grade 1**	**White and Red Pine Grade 2**	**Hemlock and Cedar**	**Conifer**	**Poplar and White Birch**	**Hardwood Grade 1**	**Hardwood Grade 2**
Northeast	Elk Lake	11.00	11.00	4.00	4.00	0.33	8.00	1.50
	Gordon Cosens Forest	11.00	11.00	4.00	4.00	0.75	8.00	1.50
	Hearst Forest	11.00	11.00	5.00	5.00	0.40	8.00	1.50
	Iroquois Falls South	11.00	11.00	5.00	5.00	0.50	8.00	1.50
	Iroquois Falls Forest	11.00	11.00	5.00	5.00	0.50	8.00	1.50
	J.E. Martel Forest	11.00	11.00	2.80	5.00	0.50	8.00	1.50
	Kapuskasing	11.00	11.00	2.50	2.50	0.50	8.00	1.50
	Lower Spanish Forest	6.00	6.00	1.00	1.00	0.50	8.00	1.50
	Magpie Forest	11.00	11.00	5.50	5.50	0.50	8.00	1.50
	Mississagi	11.00	11.00	6.00	6.00	0.50	8.00	1.50
	Moose River	11.00	11.00	3.00	3.00	0.50	8.00	1.50
	Nagagami Forest	11.00	11.00	6.41	6.41	0.75	8.00	1.50
	Nipissing Forest	11.00	6.00	6.00	6.00	0.50	8.00	1.50
	Pineland Forest	11.00	11.00	6.00	6.00	0.50	8.00	1.50
	Romeo Mallette Forest	6.00	6.00	3.75	3.75	0.50	8.00	1.50
	Shiningtree Forest	9.17	9.17	5.00	5.00	0.42	6.67	1.25
	Smooth Rock Falls Forest	11.00	11.00	0.00	0.00	0.50	8.00	1.50
	Spanish River	11.00	11.00	6.00	6.00	0.50	8.00	1.50
	Sudbury Forest	11.00	6.00	6.00	6.00	0.50	8.00	1.50
	Superior Forest	11.00	11.00	4.50	4.50	0.50	8.00	1.50
	Temagami	11.00	11.00	6.00	6.00	0.50	8.00	1.50
	Timiskaming	11.00	11.00	4.00	4.00	0.33	8.00	1.50
	Timmins	11.00	11.00	7.20	7.20	0.60	8.00	1.50
	Timmins Forest	11.00	11.00	7.10	7.10	0.75	8.00	1.50
	Upper Spanish Forest	6.00	6.00	1.00	1.00	0.50	8.00	1.50
	Watabeag	11.00	11.00	4.00	4.00	0.33	8.00	1.50
	Wawa Forest	11.00	11.00	6.00	6.00	0.50	8.00	1.50
	White River Forest	11.00	11.00	1.70	1.70	0.50	8.00	1.50
Southcentral	Algonquin Park Forest	6.50	6.50	1.50	1.50	0.10	7.00	0.10
	Bancroft	11.50	1.50	6.00	6.00	0.50	8.00	1.50
	French-Severn Forest							
	Apr. 1/99- Jul. 31/99	11.00	1.50	6.00	6.00	0.50	8.00	0.50
	Aug. 1/99 - Mar. 31/00	11.00	1.50	2.00	6.00	0.50	8.00	0.50
	Lanark	12.50	1.50	6.00	6.00	0.50	9.00	1.50
	Mazinaw	12.50	1.50	6.00	6.00	0.50	9.00	1.50
	Minden	11.50	1.50	6.00	6.00	0.50	8.00	1.50
	Ottawa Valley Forest	11.00	1.50	6.00	6.00	0.50	8.00	1.50